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SOME FUNCTIONS OF THE CEREBRAL CORTEX

LECTURE I. AUTONOMIC REPRESENTATION IN THE CEREBRAL CORTEX

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I.

The centenary year of the publication of Beaumont's book just passed has brought forth many appreciations which vividly portray the man and his work. In reading these tributes I have been impressed by the fact that William Beaumont was an individual who lived intensely in the present, and that, though well informed, he drew very little of his inspiration from those who had gone before him. When on occasion he allowed his attention to be diverted from the object of his immediate interest, he turned his eyes more often to the future than he did to the past. I feel, therefore, that a lectureship which affords opportunity to describe a living field of research is more thoroughly in keeping with the spirit of the man you wish to honor than any other possible tribute. The privilege of delivering the Beaumont Lectures is one already enriched by tradition, and I regard your invitation as a generous honor, one which as a physiologist I especially cherish because of the association with Beaumont and with the name of a distinguished medical society.

The illustrious example set by my predecessors in these lectureships causes me great embarrassement. How, for example,

Lecture II will follow in the May number of THE JOURNAL.

could any one compete with a Beaumont lecturer who was born at Prairie du Chien[6]? I can only state that if I am fortunate enough to die there, my final breath would be drawn with more than ordinary emotion! Dr. Cannon has told you that his investigations were in a sense the direct outcome of the studies of Beaumont. I can make no such claim, and yet in the realm of the central nervous system, in which my interest lies, it is perhaps significant that the newer developments have led one to consider problems of visceral function,—problems with which Beaumont's name is closely associated. It has gradually come to be appreciated that the nervous system regulates, not only the musculature of the body, but all phases of metabolism as well, and the extent to which the regulation of movement and the regulation of metabolic activities are correlated has turned out to be far more intimate than even Claude Bernard, the earliest and perhaps the most farseeing student of neurovisceral mechanisms, had anticipated. Dr. Cannon mentioned last year[6] that the contractions of the stomach were influenced by the level of blood sugar in the blood vessels of the brain, and that hunger contractions could be promoted by perfusing a dog's head with blood of low sugar content, even though the head of the dog were connected to its stomach only through the vagus nerves. It is scarcely surprising therefore that in a recent investigation of the functions of the cerebral cortex in monkeys and chimpanzees we were led almost at the outset of the investigation to consider the influence exerted by the cortex on the activities of the gastrointestinal tract. It may be of some interest to state exactly how this came about.

In a study of the functions of the frontal lobes of monkeys and chimpanzees,[10] which I propose to describe in the next lecture, several healthy and highly trained specimens were subjected to bilateral removal of parts of the frontal lobes. This procedure was sometimes carried out at one operation, and sometimes in two stages, the frontal lobe being removed first from one hemisphere and later from the other. Animals in which such an extirpation of cortical tissue had been carried out exhibited all the usual neurological features of frontal lobe deficit: great restlessness and distractibility, etc., and we soon became aware that they were excessively hungry. Indeed they appeared to eat many times the amount of food ingested by a normal monkey. It was thought at first that this might be due to some disturbance of basal metabolic rate, but it was soon found that the basal metabolism was not altered. And then, much to our distress, three valuable animals died from acute intussusception with obstruction. These animals were otherwise healthy and no cause for death was discovered apart from the obstruction. It did not occur to us at first that there could be any relation between the cortical lesion and the intestinal obstruction, but when the autopsy findings of the third fatality were disclosed, it seemed essential to Dr. Watts, a neurological surgeon who was then working in the laboratory, to consider the matter in greater detail.[24] Could it be that the movements of the gut were directly influenced by the cerebral cortex and, if so, what other autonomic functions were represented in the cerebral hemispheres? To answer these questions adequately it will be necessary to pause for a moment to consider briefly what is known concerning the subcortical regulation of visceral functions.

II.

By definition and by implication of its name, the autonomic nervous system is a peripheral system of nerves and ganglia out of reach of the "will," which is concerned with the regulation of visceral processes. The connection of this system of nerves with the central nervous system, long recognized anatomically, had been little emphasized physiologically, and it was not until the well-known studies of Bechterew,[3] Karplus and Kreidl[13] which were published just before the War that attention began to be focused upon the representation within the central nervous system of the visceral activities of the body. Claude Bernard in his early studies on the vasomotor reflexes had directed attention to the fact that important centers for the control of these reactions existed in the medulla oblongata. Karplus and Kreidl found other autonomic centers in the diencephalon, and after the War it came to be recognized that many autonomic reflexes, such as those involved in heat regulation,[2, 14] disappeared when the diencephalic area containing the hypothalamic nuclei were destroyed. More recent study of the hypothalamus has indicated that this region of the brain is concerned with the regulation

of still other visceral functions; but there is ample indication that the hypothalamus itself is dominated by higher levels of nervous integration. Thus when the forebrain is removed, leaving the diencephalic area intact, the hypothalamic nuclei become over-active, giving rise to periodic discharge of the autonomic system. These bursts of activity, which especially affect the sympathetic division, are dependent upon the integrity of the hypothalamic area.[1, 7] If the hypothalamus of an intact animal is normally held in check by higher centers, these self-same centers must play an important part in the regulation of autonomic functions. The problem, therefore, is to consider which of the higher centers are involved and what part they play.

On *a priori* grounds there is every reason to believe that the cerebral cortex itself must be intimately associated with the regulation of visceral activities. One is not obliged to resort to vague generalities concerning the influence of the "mind" on the body, for there are many objective phenomena, such as the blush of embarrassment or the pallor of fright, which clearly involve integrations at the cortical level; conditioned reflexes also suggest themselves, for these reactions depend upon the integrity of the cortex. Conditioned salivation and gastric secretion, the best known of all the conditioned reflexes, have their efferent path in the parasympathetic system. I am not aware that the Pavlov school has ever considered the anatomical pathways between the cortex and the efferent channel of outflow of these important autonomic functions, and it is clearly a problem that merits inquiry. It indeed would be surprising in view of these *a priori* considerations if it were impossible to find evidence of autonomic representation in the cerebral cortex.

III.

During the 19th century the relation of gastrointestinal movements to the cerebral cortex was studied by Bochefontaine, Bechterew and many others. They observed that stimulation in the region of the motor area of curarized dogs caused well marked movements of stomach and intestines. Bechterew[3] indeed fancied that he could define within this area specific foci for the cardia, pylorus and walls of the stomach, as well as for the intestines. Removal of the higher centers as well as stimulation appears to influence the gut. Ott and Field[18] originally observed in 1879 (without describing decerebate rigidity) that when the brain stem of a cat was transected through the posterior part of the thalami great increase occurred in peristaltic movements of the gut. Stimulation of the area caused inhibition of movement. It is commonly recognized among those who have worked upon decerebrate cats that the animal is likely to defecate soon after decerebration. In decerebrate animals free of anesthetic, peristalsis is also active; Patterson[20] (p. 194), moreover, finds that decerebration greatly increases the rate of peristalsis in the guinea pig. This strongly suggests that a center above the level of decerebration normally inhibits peristaltic activity of the gut. This inhibition may arise in part from the hypothalamus, but the following observations indicate that in monkeys some cortical center also takes part in the inhibitory process. The normal hunger contractions of monkeys have been studied by Patterson.[20]

The fatal intussusceptions mentioned above had occurred in three healthy monkeys following bilateral removal of parts of the frontal lobes. This observation gains some significance from the fact that in the course of nearly 300 autopsies on monkeys on which various surgical procedures had been carried out previously intussusception had been encountered only twice, in both instances in animals which were acutely ill. The postoperative intussusceptions might have been fortuitous accidents, but this seemed unlikely, and we therefore undertook to study the response of the gut to stimulation of the frontal lobes and various other parts of the cortex.[24] The subdivisions of the frontal lobe will be discussed in the next lecture and it will be sufficient to recall that it is made up of three principal areas: (1) frontal, (2) premotor and (3) motor.

Under light ether anesthesia the monkey's gut has proved to be particularly responsive to faradic stimulation of the frontal region, especially the premotor area. From an area near the superior precentral sulcus weak faradic stimulation caused, after a latency of about 20 seconds, moderate increase in peristaltic movements, principally of the lower intestine and cecum. Associated with this there appeared, generally in the cecum and ileum, large numbers of white bands of strong contraction which were so forceful that they tended at first to prevent the pas-

sage of an oncoming peristaltic wave. If the stimulus persisted for one to one and a half minutes a strong peristaltic wave sometimes engulfed one of the stationary white bands of strong contraction, and in this way an experimental intussusception was readily and repeatedly induced. Sometimes as many as six independent intussusceptions were developed in the same animal. None of the intussuscepted areas persisted, however, for more than a few minutes after the stimulus had been withdrawn. We thus did not witness a permanent obstruction, but no individual stimulus persisted for periods greater than two minutes. These experiments, however, have given a remarkably clear picture of the mechanical events leading up to intussusception.

Intussusception was not elicited through stimulation of points other than those within the premotor area. However, once active peristalsis had been evoked from the premotor area, it could sometimes be augmented from points on the frontal, motor and even from the postcentral region. Primary movements, however, were never produced from such points, except in one instance in which five months after removal of the premotor area stimulation of the frontal area caused peristalsis but not intussusception. In animals in which the vagi had previously been sectioned we were unable to produce intussusception through cortical stimulation, but occasionally weak augmentation of peristaltic movements occurred. The influence of removal of the sympathetic ganglion chain has not yet been studied. The general results of cortical stimulation on the gut are not unlike those recently described by Sheehan and Beattie[22] in response to stimulation of the anterior hypothalamic nuclei, except that they did not observe intussusception. Increased flow of gastric juice was seen in several experiments in response to cortical stimulation, but the phenomenon has not yet been studied in detail.

Intussusception and augmented peristaltic movements have thus been produced both from extirpation of cortical areas and from stimulation. This somewhat surprising paradox is in harmony with the belief that the cortex contains both excitatory and inhibitory elements, and that the result of stimulation from any given point is necessarily an algebraical summation of effect. Bilateral removal of both premotor areas clearly destroys an important fraction of the inhibitory components of gut movement, and the delicate balance between the mutually antagonistic functional units from the cortex is thus disturbed. It is probable that these fibers communicate with the centers of gut innervation both in the hypothalamus and in the medulla.

IV.

Cases of morbid hunger following accidental lesions of the brain have been described sporadically in the literature. They are discussed by Bechterew[3] and they were made the subject of a detailed paper by Stephen Paget.[19] One of the cases referred to by Bechterew was a child who suffered a depressed fracture in the midfrontal region from the kick of a horse. When the child recovered consciousness she cried constantly that she wanted more food. An operation was performed and the symptom of increased hunger continued for four days after the splinters of bone had been removed from the frontal region. The case of Sollier and Delagenière[23] also related to an accidental injury. It was followed by an abscess, which was drained over the left parietal lobe, but the man had a hemiplegia and it is therefore clear that the frontal lobe was involved. Several of Paget's cases showed similar symptoms.

One could not attach great significance to these isolated cases if it were not for the fact that monkeys after bilateral extirpation of the frontal areas eat excessively. This first was mentioned two years ago in the report of Fulton, Jacobsen and Kennard,[10] and, in the belief that the ravenous appetite might be due to some disturbance of metabolism, Dr. Bruhn of New Haven undertook to study the basal metabolic rate of these animals as well as of normal monkeys. Bruhn's results[5] soon made it evident that the "frontal area" animals, despite their greatly increased appetite and activity, had a normal basal metabolic rate. The ravenous appetite is also a part of the syndrome in bilateral premotor animals in which metabolic rate may be increased (owing to spasticity). In view of the abnormal peristalsis of the gut resulting from these cortical lesions, it appears to me logical to suggest that the symptoms of morbid hunger may be due to increased motility of the stomach, and that the cases of morbid hunger reported in the literature may also be attributed to this circumstance. Psychia-

trists, neurologists and neurosurgeons who encounter cases of morbid hunger should not lose the opportunity of making fluoroscopic studies of the gastrointestinal movements.

Many other pathological and psychiatric conditions are associated with bulimia. Kahn[12] has described a phase of increased hunger in a case of Pick's disease, a condition associated with degeneration of the frontal lobes. The ravenous hunger of certain idiots and general paretics is well recognized in psychiatric institutions, and schizophrenics are likely to pass through a period of polyphagia some time in the course of their disease; but as far as I am aware no one has ever studied the motility of the stomach in traumatic cases of morbid hunger, or in psychiatric cases.

V.

An even more convincing proof of the presence in the cortex of autonomic representation has come from the study of the vasomotor disturbances associated with cortical lesions and with faradic stimulation of certain cortical areas. Bechterew has discussed the problem in some detail, but many of his findings must be reinterpreted in the light of the newer knowledge of peripheral vasomotor activity. The fact that the vasomotor mechanisms essential for heat regulation are integrated in the hypothalamus does not preclude the possibility that the more delicate vasomotor adjustments are made in the cortex.

Neurologists have long been aware that the affected extremities of a hemiplegic exhibit vascular changes, pilomotor disturbances and alterations in the activity of the sweat glands. Attention is drawn to this by Gowers[11] and by many other neurologists of the 19th century. The edema which sometimes accompanies hemiplegia has recently been described and studied by Weiss and Ellis,[25] who point out:

"Circulatory changes may appear immediately after the onset of the cerebral accident and last for years. These changes are not necessarily related to the tone of the musculature or to the degree of paralysis. They occur in the presence both of normal and elevated blood pressure. The most marked unilateral edema develops in patients with previous myocardial failure.

"It is concluded that in cerebral hemiplegia, following disturbance of the central vasomotor regulation, a dilatation of the arteriolar system of the upper part of the body occurs. The diffuse arteriolar dilatation leads to increased blood flow and increased capillary pressure over the paralyzed side. This increased capillary pressure may lead, especially in association with poor cardiac function, to increased rate of filtration of fluids to the tissue and hence to edema. The functional state of the vessels of the affected side of patients with hemiplegia represents a burden on the circulation which, in the absence of increased cardiac output, is chiefly carried by the normal part of the body. The circulatory changes observed in cases of hemiplegia with marked unilateral edema may have a bearing on the mechanism of the circulation and the formation of edema in congestive heart failure."

Weiss and Ellis referred only to those cases showing vasodilatation of the affected extremities. The premotor animals, and certain human cases as Gowers pointed out, show excess vasoconstriction—a difference which undoubtedly has localizing significance. Since cases of hemiplegia generally owe their symptoms to a vascular lesion involving the internal capsule, the effects may be due solely to interruption of corticospinal pathways in the capsule, but it is generally difficult to exclude simultaneous involvement of adjacent centers in the corpora striata. Vasomotor changes have generally been attributed to some secondary alteration incident to the paralysis. That this is an inadequate explanation is evident from a recently reported case of a tumor of the premotor area which was associated with very little impairment of voluntary power,[15] but which exhibited a marked elevation of temperature over the opposite side of the body. A similar case was reported in 1895 by Rossolimo,[21] in which a cyst extending from the motor into the premotor region had caused weakness and twitching of the contralateral half of the body, with cyanosis, edema and diminution of temperature of the opposite hand. The temperature of the extremity returned to normal after the cyst had been removed.

VI.

Study of cortical lesions in monkeys and chimpanzees, described in the succeeding lecture, has given excellent opportunity to analyze the effect of cortical extirpation upon the vasomotor conditions of various parts of the body, particularly of the extremities. Dr. Margaret Kennard, who has given special attention to the problem, has made the following observations. When the premotor area of the cortex is removed from monkeys or chimpanzees the skin of the affected extremities becomes colder than that of the normal side. The difference in skin temperature comes on immediately and persists for variable periods up to a month or longer.

These thermal differences may amount to as much as four degrees Fahrenheit. In chimpanzees the skin of the affected extremities is likely to become tough, dry and scaly and all the phases of the disturbance persist long after the temporary paresis has disappeared. This indicates clearly that the changes can not be attributed to paralysis or disuse.

In attempting to discover what part of the vasomotor mechanism is disturbed by premotor lesions, Dr. Kennard made the following observation which may be described in her words.[16]

> "When a normal animal is subjected to rapid alterations in the temperature of its surroundings, there is an immediate reflex alteration of the skin temperature of the soles and palms which is equal on the two sides. After unilateral extirpation of certain portions of the frontal lobe, abrupt cooling gives rise to *vasoconstriction* which occurs equally and simultaneously in both feet as it does in a normal monkey; but on heating *vasodilatation occurs very slowly in the foot opposite to the operated cortex*, whereas in the ipsilateral foot it is prompt and normal in character. This alteration in the vasodilator mechanism is marked immediately after operation, but disappears slowly in the course of several weeks."

Careful controls have been made which afford further indication that the disturbance is specific to the premotor area; full details will be given in the account of this work which will shortly be published *in extenso*. The conclusion is warranted from Dr. Kennard's studies that the cerebral cortex is intimately concerned with the regulation of vasomotor reflexes.

The other autonomic functions represented in the cortex have not yet been thoroughly studied. After removing the premotor area from chimpanzees the affected extremities are moist during the first four or five days after the procedure, whereas the normal extremities are drier. This augmentation of sudorific activity tends to disappear after the first week, and it has not yet been determined to what extent the phenomenon is dependent upon alterations in the vasomotor mechanism. In man following cortical injuries increased sudorific activity may persist for much longer periods.[4]

Salivation has been produced by stimulation of area 6b and it has occurred as a manifestation of focal epileptic seizures when tumors or other irritating agents have encroached upon this region. Foerster and Penfield[9] have noticed that scars in the region of area 6b have also given rise to epileptic manifestations associated with chewing and salivation. Bechterew[3] believed that he had demonstrated an area in the lateral surface of the dog's cortex which evoked salivation on stimulation. This was looked upon as highly significant in view of the intimate relation of conditioned reflexes to salivation. However, Bechterew's salivation area in the dog has not been isolated by subsequent investigators (Pavlov).

Fall in blood pressure has been frequently recorded in response to stimulation of the motor-premotor region. Lewandowsky and Weber in 1906[17] were able to induce a striking fall in the blood pressure of dogs by stimulation of the cruciate sulcus. Dusser de Barenne and Kleinknecht[8] confirmed this finding and attributed it to widespread vasodilatation, possibly associated with inhibition of the heart. Bechterew[3] stated that the heart is readily inhibited from the cortex, but subsequent investigators have had difficulty in obtaining the result and it would appear that very strong stimulation must be employed to achieve it. The relation of the vagal nuclei to the cortex obviously deserves further study.

The bladder, vagina, penis, rectal musculature and other quasi-autonomic organs also find representation in the cortex, which has long been recognized from the work of Leyton and Sherrington and others, and needs no especial comment. The cortical control of the pupils is also well recognized and is readily demonstrated by stimulation of the cortical eye fields. The relation to the cortex of other autonomic functions, such as gastric secretions and the secretion of the endocrine glands, are all problems for future study.

VII. DISCUSSION

Proof of the existence of autonomic representation in the cortex makes more intelligible the visceral concomitants of many reactions known to be integrated at the cortical level. Thus the prompt "psychic" secretion of saliva and gastric juice which occurs on sight of appetizing food or on hearing a familiar dinner-gong is clearly the outcome of a complex cortical integration, and the stimulus for active secretion must, I think, come directly from the cortex. The blush of embarrassment is similarly the direct outcome of more complex cortical integration. I have determined the latent period of the blush in a susceptible subject, and have found it to be not more than three seconds from the time of utterance of a

word to which the subject was prone to react. The exact time interval is perhaps of some significance, for it indicates that the vasomotor integration is probably simultaneous with the general cortical integration, the peripheral latency of vasodilatation being itself nearly three seconds. One can easily conceive that the vasomotor reactions essential for heat regulation may be governed entirely subcortically, for complex adaptive behavior of the organism is not materially benefited by alterations of temperature; but complex adaptive behavior *is* facilitated by the blush and by other specific reactions involving the autonomic system such as the anticipatory secretions: saliva, gastric juice, etc. To find that some, at least, of these specific responses are elicitable by direct stimulation of the cortex is highly illuminating, and it serves to emphasize the closeness of association between the somatic and the visceral functions of the body. It throws light, moreover, upon the vegetative disturbances which form so prominent a part of certain mental states and diseases, and it invites closer study on the part of the neurologist and the neurophysiologist of the vegetative concomitants of all lesions of the brain. Finally, if one be permitted to end on a more general note, I think the demonstration of autonomic representation of the cerebral cortex gives welcome and vivid testimony of the essential unity of the organism.

VIII. SUMMARY

The hypothalamic and medullary centers concerned in regulating visceral activities are held in check by centers lying rostrally in the forebrain. These higher centers, therefore, must also play a part in the regulation of visceral functions. The extent to which the cerebral cortex is involved has been briefly considered.

Bilateral extirpation of the premotor cortical areas of monkeys leads to great increase in peristaltic movements of the entire gut, which in certain cases has caused spontaneous intussusception with obstruction. Great augmentation in peristaltic movements may also be induced by faradic stimulation of the frontal lobes, and this disappears when the vagi are sectioned. Evidence is given indicating that both excitatory and inhibitory representation of the gut musculature is present in the frontal lobes.

Stimulation of the frontal region causes widespread vasodilatation, with fall in blood pressure.[8] Isolated removal of the premotor area of monkeys and chimpanzees causes increased sweating on the opposite side of the body with a fall in temperature which is probably independent of sudorific activity. If an animal with a premotor lesion is placed in a warm atmosphere, the normal extremities exhibit immediate reflex vasodilatation whereas the extremities opposite the lesion fail to do so. This indicates impairment of the reflex vasodilator mechanism.[16]

Salivation has been produced in monkeys by stimulation of area 6b and it occurs in man as a result of pathological lesions situated in this region.

The well recognized representation of the pupils, bladder and vaginal and anal musculature in the cerebral cortex is touched upon.

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SOME BASIC PRINCIPLES IN THE TREATMENT OF HEART FAILURE*

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The treatment of cardiac failure becomes more and more interesting as our knowledge of the pathological physiology broadens and our insight into the rationale and basic principles of treatment increases. Information concerning these principles has, during the last few years, appeared from many different angles. It is the purpose of this paper to present some of the more important of these findings and discuss them in relation to their application in everyday practice. Before doing this it would be well to briefly discuss the pathological physiology of cardiac failure.

PATHOLOGIC PHYSIOLOGY OF CARDIAC FAILURE

Cardiac failure is now generally believed to be due to decreased cardiac output[17] resulting from weakened ventricular contractions. Functionally the heart becomes unable adequately to pump blood from the venous to the arterial side of the circulatory system. This insufficiency produces an increased venous pressure contributing to cardiac dilatation centrally and congestion cyanosis and edema peripherally. Reserve capillaries are opened early in an endeavor to compensate for a decrease in the volume flow of blood while other arterioles and capillaries reflexly contract to prevent an injurious fall of blood pressure or a slowing of the circulatory rate. Finally as cardiac weakness progresses the clinical symptoms of heart failure are manifested. Broadly speaking they can be considered the result of tissue anoxemia and venous and capillary congestion.

In the lungs because of the congestion and edema there is a thickening and stiffening of the alveolar walls, hindering the exchange of gases between the atmosphere and the blood and contributing to the early finding of reduced pulmonary volume and decreased vital capacity. Nervous reflexes arising in the lungs and later the accumulation of lactic acid and carbon dioxide stimulate the respiratory center, causing dyspnea. Dyspnea in turn causes an increased pulmonary ventilation often doubling the amount of inspired air.[19] As a result of the increased ventilation the oxygen saturation of the blood is low while the CO_2 and lactic acid content remains high.[20] This is partially compensated for by a greater utilization of oxygen by the tissues as shown by an increased arterio-venous oxygen difference.[42, 43] In the tissues, as a result of the anoxemia, certain metabolic changes occur which are manifested by a disturbance of the acid base equilibrium. Early this is aggravated by upset kidney function, the result of congestion, and later by the accumulation of lactic acid which has failed to be oxidized to carbon dioxide and water or converted into blood glucose. These metabolic disturbances decrease further the functional capacity of the heart muscle so that with advancement in failure a vicious circle is established. While the metabolism of cardiac muscle is

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not thoroughly understood it is well established that certain metabolites such as lactic acid, creatine and phosphates are formed during systole and that normally they are oxidized or reconverted into glycogen and phosphagen during diastole. This process, from a dynamic standpoint, furnishes a means for the heart to recover the energy during diastole which it has expended during the previous systole. But, in the presence of heart failure this sequence of events is not completed, metabolites are allowed to accumulate, which means that the expended energy has not been fully recovered and that myocardial weakness is gradually increasing.

With this sketchy account of the pathological physiology of cardiac failure in mind let us focus our attention on means of combating these functional disturbances. Obviously our therapeutic efforts should center around two main principles. First, attempts should be made to restore to normal the lowered cardiac output, and, secondly, the demands on the heart should be reduced to a minimum.

MEASURES INTENDED TO INCREASE THE CARDIAC OUTPUT

Many factors active in increasing the cardiac output are susceptible to outside influences. While closely related and interdependent they can, broadly speaking, be grouped under two general heads: first, those processes considered to be of a metabolic nature and, secondly, those more properly thought of as mechanical.

1. Metabolic Factors

Any discussion of the metabolic processes will necessitate a separate consideration of the important factors concerned, remembering, at the same time, that all these processes are closely related. It has been pointed out that in the normal heart the accumulated metabolites are removed during diastole. In the failing heart this recovery process is slowed. Prolongation of the diastolic period may then furnish sufficient time for complete recovery. This can be accomplished by bodily rest and the administration of various régimes selected according to the special features presented. The effect of prolonging the diastolic period can be enhanced by anything which will aid in the completion of the metabolic processes occurring normally during that period.

(a) Oxygen Requirement.—Of the metabolic factors concerned, oxygen occupies a most prominent position. Meakins and G. T. Evans[28] working with rats found it impossible, in the presence of an adequate oxygen supply, to reduce the glycogen content of cardiac muscle by severe exercise. In the presence of anoxemia, however, the glycogen content was easily depleted. Peters and Barr,[31] Meakins and Long[29] and Katz and Long[23] have shown that there is a rapid accumulation of lactic acid in the muscles and circulating blood whenever the oxygen supply is deficient. Katz and Long showed further that mammalian heart muscle is relatively intolerant to lactic acid, becoming exhausted at concentrations of .072 Gms. per cent, whereas skeletal muscle is able to withstand lactic acid accumulation up to .252 Gms. per cent. Hill[22] has demonstrated that the oxidation of lactic acid resulting from muscular activity depends upon the oxygen supply to the tissues. Whenever this is deficient an oxygen debt ensues and lactic acid accumulates in the muscles. Redfield and Medearis[33] have shown that the ability of the turtle's heart muscle to develop tension is inversely proportional to the lactic acid content of the muscle fibres. Meakins and Long[29] showed that cardiac failure patients have a maximum oxygen utilization lower than normal and therefore start to build up an oxygen debt sooner than normal. These same authors believe that the lactic acid increases with advancement in the cardiac failure so that in any given case it is proportional to the severity of the failure present. Finally, Katz and Long[23] have shown that dilatation and failure soon result after a reduction in the oxygen supply to the heart muscle. These observations emphasize the important rôle played by oxygen in the metabolism of cardiac muscle and suggest the possibility of obtaining beneficial effects from an atmosphere having a high oxygen concentration. In 1921 Barach and Woodwell[3] demonstrated that the low oxygen saturation of the blood in cardiac failure could be raised to normal by the inhalation of an atmosphere containing 40 to 60 per cent oxygen. Barach and Richards, Jr.,[4] demonstrated in 1931 the beneficial effect obtained in cardiac failure patients placed in an atmosphere of 40 to 60 per cent oxygen. They observed a rise in the arterial oxygen saturation to normal, a decrease in pulmonary ventilation and a decrease in the accumulation of acids in the tissues. These changes

were accompanied by clinical improvement manifested by lessened dyspnea cyanosis and edema. Increased oxygen concentrations are best obtained by the use of an oxygen room, but where this is impossible the oxygen tent or the oxygen tank with funnel or nasal catheters afford good substitutes.

(b) Carbohydrate Requirement.—While our knowledge of the chemical details of carbohydrate metabolism is not complete, it is well established that the source of energy for muscular contraction is closely related to the breakdown of phosphagen into creatine and phosphate and of glycogen into lactic acid. Part of the lactic acid, about one fourth, is oxidized into carbon dioxide and water; the remainder is carried to the liver, where it is rebuilt to glycogen, which is later discharged into the blood as glucose and carried to the heart muscle for resynthesis into muscle glycogen.[10, 24, 26] In this way glucose is conserved for use by the muscles. Experimentally its importance can be demonstrated by the production of hypoglycemia in diabetics with heart disease. This procedure, accomplished by the use of insulin and low carbohydrate diets, has frequently caused clinical and electrocardiographic evidence of cardiac damage which could be relieved by glucose administration.[44]

Edmunds and Cooper[12] in 1925 obtained beneficial results from the intravenous administration of 10 per cent glucose to dogs suffering from cardiac failure due to diphtheria toxins. The observations of Fred Smith[36] lead him to conclude that patients with congestive failure require less digitalis and improve more rapidly when a plentiful supply of carbohydrate is administered. Where possible it seems better to supply glucose by means of a high carbohydrate diet so that its gradual absorption and diffusion will allow the maintenance of a high glucose content in the blood and tissues without radical adjustments of the blood volume. When the intravenous route is necessary small amounts of hypertonic glucose solutions, 25 to 50 per cent, probably require less rapid adjustments of the blood volume than larger amounts of a less concentrated solution.

(c) Quality of Circulating Blood.—The advantage gained by the administration of high concentrations of oxygen and carbohydrate is partially neutralized by any conditions which decrease the capacity of the blood to act as a transportation medium for these substances. Normal individuals living at or near sea level have an almost constant amount of hemoglobin. This together with a normal cardiac output adequately feeds and ventilates the tissues. If anemia is present, however, the oxygen-carrying capacity of the blood is decreased so that compensatory adjustments become necessary. These adjustments are accomplished largely by increasing the cardiac output. Dautrebande[11] showed that a fifty per cent reduction of hemoglobin caused a compensatory increase in cardiac output and that reductions below this level were accompanied by a further proportional increase. Herrick and Nuzum[20] and Herrick[21] pointed out the association of angina pectoris with severe anemia and concluded that it is due to myocardial anoxemia secondary to the anemia. Its frequency in pernicious anemia and its disappearance following liver therapy is now a common observation. It seems important therefore to combat any existing anemia. This can best be accomplished by appropriate treatment of infections, the administration of iron or liver extract or in some cases by the performance of blood transfusion.

General anemia, however, is only part of the problem. From our knowledge of the coronary circulation we know that pathological changes or spasm or both may cause anemia of the heart muscle, thus impairing its function. Many studies of the physiological and pharmacological influences on coronary flow have been made. In 1926 Smith, Miller and Graber[37] showed that the rate of coronary flow is a direct function of the blood pressure, especially the diastolic pressure. Later Smith[34] showed that the rate of coronary flow, within certain limits, is directly proportional to the cardiac rate. His[34, 35] observations concerning the influence of certain drugs indicate that the nitrites, euphylline and theophylline are most effective in increasing coronary flow while caffeine sodio-benzoate and theobromine sodio-salicylate have little, if any, similar action. Gilbert and Fenn,[14] working with the intact animal, concluded that the order in point of efficacy of these drugs is, first, theobromine and its salts, second euphylline, thirdly theophylline sodium acetate and lastly caffeine. The clinical results reported by Marvin[27] and Gilbert and Kerr[15] indicate that the action of these drugs is similar in humans to that found by Smith and Gilbert

and Fenn in experimental animals. From a therapeutic standpoint these authors emphasize the fact that good results are much more consistently obtained in the arteriosclerotic and hypertensive cases than in those where rheumatic fever or syphilis form the etiological background.

2. *Mechanical Factors*

(a) Arrhythmias.—In consideration of the mechanical factors concerned, the arrhythmias suggest a mechanical defect likely to cause a decreased cardiac output. Stewart, Crawford and Hastings,[41] working with dogs, found a decrease in cardiac output when auricular fibrillation was produced artificially. Smith, Walker and Alt[38] determined the cardiac output of patients during and after irregularities due to auricular fibrillation and extrasystoles. Two patients showed an increase of 25 per cent in the cardiac output after auricular fibrillation had been abolished. One of these patients showed the same cardiac output when the arrhythmia was due to extrasystoles as when due to auricular fibrillation. Restoration of normal rhythm was accompanied by an increase of twenty-nine per cent in the cardiac output. Three patients with complete heart block were studied by these authors and found to have a normal output while at rest. Barcroft, Boch and Roughton[5] observed a marked decrease in cardiac output during an attack of paroxysmal tachycardia in a patient otherwise normal. These findings emphasize the importance of correcting arrhythmias unless contraindications prevent.

(b) Myocardial Tonicity.—As long as heart muscle tone remains normal, dilatation is confined to physiological limits. It then occurs as a result of increased demands and makes possible an increase in the ventricular output. The almost constant association of cardiac dilatation with congestive failure is prima facie evidence of decreased myocardial tonicity. Under such conditions abnormal dilatation occurs, the ventricles are overfilled and complete emptying does not occur. That such a heart is inefficient has been proven by Visscher and Starling,[39] who, by means of oxygen consumption studies, were able to demonstrate that cardiac efficiency decreases as the diastolic volume increases. Under these conditions a cardiac tonic such as digitalis is definitely indicated. The benefical action of this drug is now generally believed to be closely connected with the resulting decrease in dilatation. The exacting measurements performed by Richard Bodo[9] have shown that digitalization not only decreases the diastolic volume of the failing heart but enables it to do the same amount of work at this smaller volume. This, as Visscher and Starling[39] have shown, means that the heart is working with greater efficiency. Finally the cardiac output measurements recently made by Stewart and Cohn[40] show that digitalis actually increases the cardiac output in such patients.

The possibility of cardiac dilatation being increased by high venous pressure and increased blood volume seems worthy of consideration. As yet blood volume measurements in cardiac failure can hardly be considered accurate but the accumulated evidence seems to indicate that it gradually increases as cardiac failure advances. Assuming both these factors to be contributory, one would expect venesection to aid in diminishing the dilatation present.

For years venesection was popular in the treatment of cardiac failure. That it failed to improve many cases accounts for its diminished use during the last several years. The observations of Eyster and Middleton,[13] Gordon[16] and Meek and Eyster[30] show that patients with high venous pressures frequently improve after venesection. Whenever improvement occurred it was accompanied by a lowered venous pressure and a decrease in the size of the heart.

It seems safe then to conclude that impaired muscle tone, as manifested by abnormal dilatation, is the direct cause of decreased cardiac efficiency and that it can be combated by digitalis and in selected cases by venesection.

(c) Pulmonary Ventilation.—Certain mechanical factors are useful in combating the lowered vital capacity. The semi-Fowler's position allows a greater diaphragmatic excursion and the vertical position of the lungs causes the edema and congestion to be confined to the bases. For the same reason the better venous return from the brain improves the circulation through the respiratory center, thus decreasing dyspnea and contributing to the comfort of the patient. Frequently the vital capacity is depressed by the accumulation of fluid in the pleural and abdominal cavities. Paracentesis then becomes an effective measure in improving pulmonary efficiency.

MEASURES DESIGNED TO DECREASE THE DEMANDS ON THE HEART

Measures intended to reduce cardiac work may be thought of as playing an important rôle in the prevention as well as the cure of cardiac failure. While they are of value in the former they can nevertheless be used to advantage in the latter, especially if a lengthy period is required to obtain satisfactory cardiac response. That absolute rest in bed is of major importance is emphasized by the work of Grollman,[17] who has shown that moderate amounts of work often quadruple the cardiac output in normal persons. The investigations of Bansi and Groscurth[2] show that the cardiac output in failure is less at rest than normal and that it does not increase normally with increased muscular exertion. They have shown further that after exercise the output is maintained above its resting level longer than is the case with normal persons.

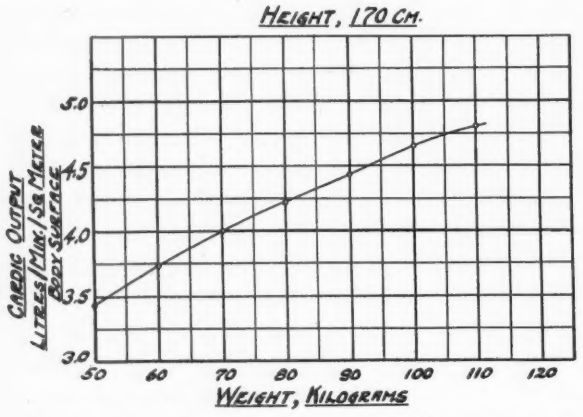

Fig. 1. Curve showing the computed cardiac output values accompanying weight increases in an individual of constant height.

(a) Obesity.—Since Laennec in 1831 described the "fatty heart" as a clinical entity there has been much controversy concerning the effect of fatty deposits in and between the heart muscle fibres and the relation of such deposits to general obesity. Recently Prodger and Dennig[32] made observations upon the functional integrity of the cardiac output and related circulatory functions in obese patients otherwise normal. By comparing these findings with like measurements in normal persons, showing no tendency to obesity, they found that the obese differed from the others in several ways but because of the normal cardiac output and arteriovenous oxygen difference these investigators concluded that the symptoms so frequently associated with simple obesity are not due to insufficiency of the circulatory system.

Grollman's[17] studies have shown, however, that normal individuals under basal conditions have a cardiac output proportional to the surface area. This value he has called the cardiac index and finds it to be $2.2 \pm .3$ litres per minute per square meter of body surface. In other words, an increase of one square meter in body surface requires an increase in cardiac output of 2.2 litres per minute. This effect may be better appreciated by reference to the curve shown in Figure 1, in which the cardiac output of a patient of constant height is computed for each increase in body surface resulting from gains of 10 Kgms. in body weight.

In the absence of cardiac failure or advanced cardiac pathology the increased cardiac work occasioned by obesity is probably of little or no significance. But where mild or advanced cardiac failure is present obesity is a factor of undoubted importance and should be combated in order to decrease demands on the heart.

(b) Metabolic Rate.—Grollman[17] and Blumgart, Gargill and Gilligan[6] have shown the cardiac output and the rate of blood flow to be proportional to the height of the metabolic rate. Any reduction, then, in the rate of metabolism will proportionately reduce the demands on the heart; this factor, to a great extent, accounts for the disappearance of heart failure in thyrotoxic patients following thyroidectomy. Recently Levine and Blumgart[7, 8] and their coworkers have observed the effect of removal of the normal thyroid gland in intractable cases of cardiac failure. Their results seem very encouraging. Further observations on their treated cases will be most valuable in fully appreciating the merits of this procedure.

(c) Edema.—The edema of cardiac failure is due to increased filtration of fluid through the capillary walls into the surrounding tissues. The rate of filtration is known to be proportional to the height of the venous pressure above the osmotic pressure of the plasma proteins. Landis[25] demonstrated that the permeability of frogs' capillary walls could be increased by reduction of their oxygen supply. He states: "This effect of oxygen lack is of interest since it seems probable that the edema of cardiac decompensation cannot be explained purely in terms of capillary pressure."

The effect of edema *per se* on the circula-

tion is little understood. Many have assumed that the swollen tissues obstruct the flow of blood through the capillaries. The work of Harrison and Pilcher[18] along this line is interesting. These investigators found the arterio-venous oxygen difference in edematous extremities to be decreased in direct proportion to the amount of edema present. They believe these findings can be accounted for only by an increased volume flow of blood through the edematous extremities. This they attribute to a widening of the capillary bed in response to stimulation arising as a result of anoxemia of the tissues involved. They reason that such an increased flow necessitates an increased cardiac output and therefore delays recovery. Whether one assumes that edema acts as an obstructing agent or as a stimulant to increased blood flow, it seems logical to direct treatment toward its removal. If digitalization and bed rest have produced only partial reduction of the edema the administration of diuretics or the use of a neutral diet and ammonium chloride is frequently followed by reduction of edema and further improvement in the patient's condition.

(d) Diet.—The mechanical adjustments provoked by the intake of food have been studied by Grollman[17] and others. The increased cardiac output found is variable, being modified chiefly by the bulk of the meal, large meals causing a greater and more prolonged increase in cardiac output than small ones. Aperia and Carlens[1] studied the influence of proteins, fats and carbohydrates taken separately. They concluded that protein caused the highest and most prolonged rise in cardiac output. Fat and carbohydrates were compared in isodynamic quantities, the former requiring a lower total cardiac output than did the latter. The ingestion of fluids has long been known to cause definite circulatory adjustment. When large quantities of water are ingested (2 litres in 15 minutes) diuresis starts promptly, the urinary output rising as high as 122 c.c. per hour. This prompt adjustment prevents any appreciable dilution of the blood so that a constant blood volume is maintained. If, on the other hand, similar quantities of normal saline are taken, the urinary output is only slightly increased during the succeeding twenty-four hours. The hemoglobin concentration may fall by 10 per cent during this period, indicating that dilution of the blood proteins and increase in the blood volume has occurred. These reactions are of greater interest when compared with the results of cardiac output measurements made by Grollman.[17] He found that the taking of fluids by mouth definitely increased the cardiac output. The ingestion of isotonic salt solution and Locke's solution caused a more marked increase than did water. This he concluded was due to a state of plethora in the vascular system resulting from the rapid absorption and prolonged retention of isotonic solutions in the blood stream. These, together with observations previously mentioned, indicate that the cardiac failure patient should have a concentrated diet, rather low in protein, high in carbohydrate and having a caloric content arranged to correct any abnormalities in weight.

CONCLUSION

Certain therapeutic procedures have been presented from the standpoint of the physiological principles involved. Many of these principles are still theoretical and questionable. In such cases the final word can only be spoken after thorough analysis in the laboratory of clinical and experimental observation:

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COMPARATIVE RESULTS OF TREATMENT OF SEVENTY CASES OF HYPERTENSION WITH LIVER EXTRACT, DIATHERMY, AND DRUGS*

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Heidenhain[8] in 1891 was the first to show a reduction in hypertension by the use of organ extracts and among others that of liver. Since this time many reports have been made bearing on this subject. Major[14] found that liver extract lowered both the systolic and diastolic pressures, in some cases as much as 50 millimeters of mercury. No untoward effects from its administration were encountered by him. McDonald[11] accidently discovered that liver extract lowered blood pressure while giving it to patients with carcinoma. He[12] also found that discontinuing the extract resulted in the blood pressure becoming elevated again and that cases of essential hypertension responded best. Alhausen[1] and others discovered that, although the extract lowered blood pressure, the symptomatic relief was not necessarily proportional to the degree of fall or even present in some instances. Experimental data have been supplied by James and Laughton[9] to show that extracts of liver reduce hypertension in dogs and this reduction may be maintained over long periods of time.

Granger[7] reports considerable success in the treatment of hypertension with the use of the high frequency current. He found that the effect was upon the sympathetic nervous system, resulting in increased urea output, decrease of uric acid, increased output of carbon dioxide and, locally, a superficial analgesia. Believing that with increased resistance the heart must necessarily work harder, increasing the metabolism of the body generally will lower the pressure. The presence of an advanced stage of parenchymatous nephritis, where hypertension is necessary for the proper elimination of urine, he contends is a contraindication to the use of diathermy. Of the different

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types of high frequency used he found autoconduction to be the most effective.

Among other substances and methods that have been employed with varying degrees of success are sulphocyanate of soda by Smith and Rudolph[20] and Berg[5]; Ergotamine Tartrate, Ergotamine and Acetylcholine combined and sodium sulphocyanate by Meakins and Scriver;[16] potassium thiocyanate by Fineberg;[6] potassium sulphocyanate by Maquire;[15] potassium bromide and potassium chloride by Allison;[2] calcium chloride by Allison and Clark;[3] and the potassium ion by Priddle.[18] The use of nitroglycerin has been found by Zeiss and Brams[23] to lower the systolic pressure in three cases and diastolic in six cases but caused an actual elevation in six other cases. Wallace and Ringer[21] report only a temporary fall of blood pressure by the use of nitroglycerin. Mistletoe,[17] corpus luteum,[19] subtonin,[10] watermelon extract,[22] benzyl benzoate[13] have also been used. Ayman[4] found a few drops of dilute hydrochloric acid given daily were about as efficacious as any other drug used and concluded that serious and enthusiastic treatment is the main factor in the therapy. This author suggests that the condition of essential hypertension may be one of a vegetative neurosis.

During a period of three years a group comprising seventy cases of hypertension has been studied. All patients having a systolic pressure of 150 or over and a diastolic pressure of 100 or over were considered cases of hypertension. The ages have ranged from twenty-five to seventy-nine years, the average being 55.2 years. Seventy-eight per cent of the patients were between 40 and 69 years of age, 11 per cent were over 69 years, and 12 per cent were under the age of forty. Average duration of observation has been 10.5 months, although some cases have been under treatment for three years or longer. Sixty patients were females and ten males. These patients have not been limited to those suffering from so-called essential hypertension. However, an effort has been made to classify them according to their complications. They have been seen for the most part in routine office and hospital practice.

The group of seventy has been divided into three classes. Since hypertension has been thought by many to be a vegetative neurosis and, therefore, that the beneficial results from any form of therapy could be ascribed to suggestion, it was deemed best to prescribe the usual measures of general hygiene and low-protein, low-salt diet and to administer the usual sedatives and nitrites to all patients. Thus the element of suggestion could largely be ruled out and the group receiving drugs alone would serve as an excellent control. Consequently, twenty-seven patients were treated with drugs alone, thirty-four were given in addition hypodermics of liver extract, and in eighteen other cases diathermy was instituted in addition to drugs.

The drugs administered to Group I consisted of sedatives, nitroglycerin and digitalis when indicated. The ages ranged from thirty to seventy-nine, with an average of fifty-four. There were twenty-six females to one male. Average time of observation was seven months. Average systolic blood pressure was 181 and diastolic 101 before treatment. After treatment was instituted average systolic was 166 and diastolic 98. This represented an average systolic reduction of 15 points and diastolic of 3. Eleven (40 per cent) were completely relieved of their symptoms, six (25 per cent) were partially relieved, seven (25 per cent) showed no relief. Three (11 per cent) were asymptomatic before treatment.

Group II, consisting of thirty-four cases, comprises those cases that have also been given liver extract. Each cubic centimeter dose of the preparation used represented 25 grains of fresh liver substance. It has been customary in the majority of the cases to start with the injection of one cubic centimeter of the extract three times a week for a period of two weeks, then two injections a week for several weeks, and after that one injection a week for a long period. Injections were given intramuscularly. Ages in this group ranged from twenty-five to seventy-four, average fifty-three. There were twenty-eight females and six males. Average time of observation was nine months. Average systolic pressure was 204 and diastolic 116 before treatment. After treatment average systolic was 180 and diastolic 107, representing average systolic reduction of 24 and diastolic of 9. Nineteen cases (55 per cent) were completely relieved, eight (23 per cent) partially relieved, four (11 per cent) experienced no relief, and one (2 per cent) was worse; two (5 per cent) were asymptomatic. There were no untoward reactions to the treatment except

CHART I. TABLE SHOWING GENERAL RESULTS

Type of Therapy	Av. Syst. Before	Av. Syst. After	Av. Syst. Reduction	Av. Diast. Before	Av. Diast. After	Av. Diast. Reduction	Cases	Completely Relieved
Group I Drugs	181	166	15	101	98	3	27	40%
Group II Liver Extract	204	180	24	116	107	4	34	55%
Group III Diathermy	192	189	3	111	103	8	18	22%

CHART II. TABLE SHOWING SYMPTOMATIC RELIEF OBTAINED

Type of Therapy	No. of Cases	Completely Relieved		Partially Relieved		Not Relieved		Made Worse		Asymptomatic	
Liver Extract Therapy	34	19	(55%)	8	(23%)	4	(11%)	1	(2%)	2	(5%)
Drug Therapy	27	11	(40%)	6	(22%)	7	(25%)	0	(0%)	3	(11%)
Diathermy Therapy	18	4	(22%)	5	(27%)	8	(44%)	1	(5%)	0	(0%)

CHART III. TABLE SHOWING INFLUENCE OF CARDIO-RENAL COMPLICATIONS UPON SYMPTOMATIC RELIEF OBTAINED

Presence or absence of organic changes	LIVER EXTRACT THERAPY			DRUG THERAPY			DIATHERMY THERAPY		
	Complete relief	Partial relief	No relief	Complete relief	Partial relief	No relief	Complete Relief	Partial relief	No relief
Cardio-Renal	5 (38%)	3 (23%)	5 (33%)	3 (33%)	3 (33%)	3 (33%)	1 (16%)	1 (16%)	4 (66%)
None	14 (70%)	4 (20%)	2 (10%)	8 (53%)	3 (20%)	4 (36%)	3 (25%)	4 (33%)	5 (41%)

for a slightly sore arm for several days after the injection. Many patients were apparently relieved after the first injection. Several interesting phenomena were noted during period of observation. In Case 11 there was a drop of from 230 to 150 systolic and 140 to 100 diastolic after treatment for three months. Case 14 dropped from 206 to 154 systolic and 110 to 90 diastolic over a period of three years. After cessation of treatment for five months systolic increased to 220 and diastolic 120. In Case 25 after one injection there was a drop of 30 points in systolic pressure and an increase of 10 points in diastolic with symptomatic relief. Pressure gradually increased again with return of symptoms. In Case 27 there was a drop of 50 points systolic and 43 diastolic after one injection, with a final drop of 32 points systolic and 55 points diastolic and with only partial symptomatic relief. Case 30 showed a drop of 60 points systolic and 10 diastolic over a period of five weeks. Several other cases showed similar drops.

Eighteen cases made up the group that received diathermy. The ages ranged from fifty to seventy-one, average fifty-eight, of which sixteen were females and two males. Average time under observation was sixteen months. Average systolic pressure was 192 and diastolic 111 before treatment. After treatment systolic was 189 and diastolic 103. Average reduction in systolic pressure was 3 and diastolic 8. Four cases (22 per cent) were completely relieved, five (27 per cent) partially relieved, and eight (44 per cent) experienced no relief. One (5 per cent) was worse. None of these cases was asymptomatic before treatment.

DISCUSSION

Of the three groups of cases studied, the one receiving liver extract showed the most marked improvement. In Group I the average drop in systolic and diastolic pressures was 15 and 3 respectively. In Group II, 24 and 9, and in Group III, 3 and 8. In Group I 40 per cent received complete relief of symptoms as compared with 55 per cent in Group II and 22 per cent in Group III. The percentage of those partially relieved were 22, 23, and 27 in the three respective groups. However, seven (25 per cent) in Group I, four (11 per cent) in Group II, and eight (44 per cent) in Group III received no relief.

Many interesting observations and deductions have been made from a study of these patients. The two most common symptoms complained of were headaches and dizziness, the former occurring in 55 per cent of the cases and the latter 31 per cent. Other symptoms complained of were rapid pulse, heartburn, nosebleed, precordial pain, poor memory, shortness of breath, insomnia, poor vision, nocturia, frequency and generalized weakness. Four cases were without symptoms referable to elevation of blood pressure. It was observed that the fall in pressure was not always commensurate with the relief of symptoms obtained. In Case 2, Group I, the patient had no reduction in the blood pressure but did experience complete relief under treatment, although he had previously had a drop of 32 points in systolic pressure following cholecystectomy but without relief of symptoms. In Case 7, however, the patient experienced no relief from symptoms in spite of a drop of 62 points in systolic and 10 in diastolic pressure.

The incidence of females to males was very high, seven to one. In Janeway's series hypertension was 15.6 per cent and in Bell and Dawson's group 1.4 per cent more frequent in males, whereas in Boas and Fineberg's group females were two-thirds more frequently encountered and twice as often in Blackford, Bowers and Baker's series.

The blood pressure of those patients receiving liver extract was higher than in the other groups and it was in this group that most striking results were obtained. Otherwise the degree of hypertension did not afford any prognostic value insofar as the results obtained were concerned. Of the seventy cases, twenty-eight (40 per cent) had some cardiorenal involvement. Only 32 per cent of these cases obtained complete relief as compared with 83 per cent of the essential hypertension group that experienced relief. Only one case in the cardiorenal group was definitely made worse by a fall in blood pressure. One patient in the group had a brain tumor. One had lues. One patient has since died of cerebral hemorrhage, although systolic pressure was reduced 22 and diastolic 12 points. It has been generally considered unwise to administer nitrites over a long period of time. No permanent ill effects were noted from prolonged use of nitroglycerin although some patients re-

ceived this drug more or less continuously for a period of two or three years.

Only 11 per cent of the cases revealed a familial history of hypertension. This figure, however, is probably low because in many instances there was a lack of definite knowledge on the part of the patient of the family history. Eleven of the cases were associated with menopause. Twenty-eight per cent of the seventy cases had an associated obesity. The average weight of these patients was 175 and average ideal weight 150 pounds. Of the cases studied under forty years of age, only two were of the essential hypertension type. Forty-five per cent of the cases of diabetes studied in the clinic in the last two years had an associated hypertension. The average systolic pressure of these patients was 175, average diastolic 100, average age 54, and average fasting blood sugar 196.

CONCLUSIONS

1. The administration of liver extract with sedatives and nitroglycerin has proved the most effective treatment in essential hypertension.

2. Cases having cardiorenal complications reacted much less favorably to treatment than those of essential hypertension. Drug therapy was just as effectual in the former group.

3. Diathermy combined with drugs afforded less relief than when drugs were used alone.

4. Reduction in blood pressure caused practically no ill effects in all three groups.

5. The symptomatic relief obtained did not always parallel the drop in blood pressure.

6. Obesity was encountered in a little over one-fourth of the cases studied.

7. In the series of diabetic patients hypertension was encountered in nearly half the cases.

8. Menopause was associated with hypertension in only 11 per cent of the cases, although females predominated seven to one in the series.

9. Essential hypertension was encountered in only two cases under forty years of age, representing an incidence of 2.8 per cent occurring under this age.

10. Prolonged administration of nitroglycerin caused no permanent ill effects.

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CALCINOSIS—EXTENSIVE DEPOSITS IN THE HAND AND ARM

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Calcium deposits, occurring in almost every part of the human body, have been described in medical literature. Extensive treatises have been written on the subject and various forms associated with other diseases, noted. Yet observation of the condition, particularly in the field of general practice, appears to be sufficiently rare to warrant the publication of the following case.

The etiology has not been definitely established although numerous theories have been advanced as to its origin. These include results of inflammatory reactions and disturbances of inorganic calcium metabolism similar in character to gout, except that calcium salts are deposited instead of urates. Skossogorenko[5] states that the term "Calcinosis" is applied to a somewhat rare and peculiar disease involving calcium metabolism, the etiology of which is not clear and the treatment for which has not been determined. Clinically, the disease shows multiple deposits of calcium salts in the subcutaneous, peri-articular, peri-tendinous, peri-muscular, peri-nervous, peri-vascular, adipose or interstitial tissues. The deposits vary in size from a millet seed to a pigeon egg and usually have the appearance of platelets, clots or crumb-like masses with smooth but mostly uneven edges. Each case differs as to the distribution of the calcium deposits as well as to the tissue they select. In the Riese case, they appeared in the finger-tips after a needle-prick. However, such deposits are mostly grouped about the larger joints, around the attachments of tendons and aponeuroses, resulting in reduced motion or even immobility and producing malposition of the limbs. All ages are subject to the disease but most authors agree that in younger individuals it is more widely distributed and clinically more acute. In the areas of localization of the calcium, ganglionic abscesses may form which discharge a gruel-like mass. With adults, on the contrary, the location of the disease is more limited in its distribution and its clinical course more benign.

In a series of reported cases, the disease sometimes began without any definite cause and no pathological symptoms were evident. In other cases, there were noted adenomata of the epithelial structures (Selye); hypoplasia of the inner genitalia and, in connection with menstruation, marked variation in the calcium content of the blood (Shamoff); nephritis (Schintzer and Selye); Tuberculosis (Lowenbach); Scleroderma (Krause, Durham); rachitic affections of the whole skeleton and joint involvement.

Infectious diseases sometimes preceded the condition. In Parkes' case, the patient had had scarlet fever and diphtheria two years before. In Aesenberg's case, there had been malaria. Most authors note an atrophy of the skeleton with this disease and Schulze states that this must be considered not as the result, but as the beginning of the disorder in the calcium metabolism. Local accumulation is curtailed by liquefaction and expelling the contents of the lesions. Tashiro[6] is of the opinion that calcification need not necessarily be preceded or accompanied by an abnormal amount of calcium in the blood, the essential feature for pathologic and normal processes of calcification being the local production of ammonia or any other base forming compound with the normal supply of calcium. This may follow infection, mechanical irritation or changes in physiologic protein metabolism at the same point.

Watt[7] states that there is no evidence of any cellular activity concerned in the deposition of calcium salts but that there is evidence for their appearance here by precipitation. The precipitation may be originally in the form of carbonate and phosphate of calcium or may be as a calcium soap formed by reaction with a fatty acid and later gradually converted into the carbonate and phosphate.

Cases of calcinosis associated with other

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pathologic processes such as scleroderma and Raynaud's disease have been reported by Durham,[2] Scholz[4] and others. In the case here reported no evidence of other pathologic change was found.

Kennedy[3] reported a case of calcinosis with deposits occurring in the ante-cubital spaces, axillæ, and popliteal spaces, region of the hips and over the lower portion of the spine. X-rays revealed extensive calcium deposits in the skin and subcutaneous tissues and in the fascial sheaths and tendons. On a ketogenic diet the child, five years later, was well clinically and the calcium deposits had disappeared.

Craig and Lyall[1] reported "A Case of Calcinosis Universalis and a Suggested Method of Treatment." The patient, a girl of five years, was seen in March, 1927, and x-rays revealed many calcareous deposits in the soft tissues. Di-sodium phosphate drachms 1 was given orally four times a day. Within six weeks the calcareous masses were gone. Jeppson noted an increase in the excretion of calcium in feces in children after the administration of di-sodium phosphate.

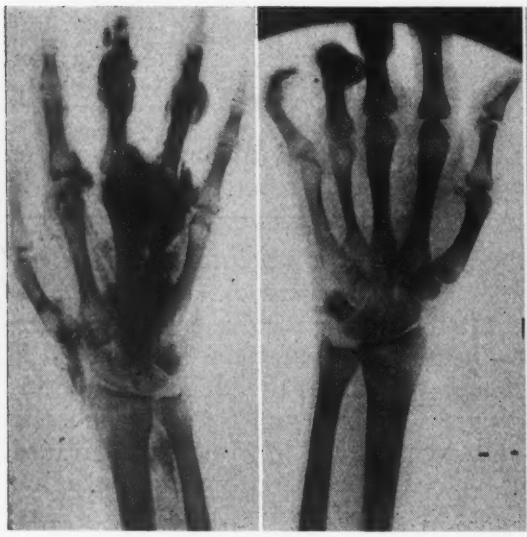

Fig. 1. Original plates taken in 1925 showing extensive deposits in the right hand and beginning deposits in the forearm. Left hand shown for comparison. Contractions of the terminal portions of the middle, ring and little fingers are due to an old injury.

Fig. 2. Plates taken in 1925 showing marked deposits in the right hand.

REPORT OF CASE

Mr. A. L., aged twenty-three, a machine operator, reported for treatment of an infected finger in December, 1926. He stated that about six years previously he had had a sliver in the end of the middle finger of the right hand which a friend attempted to remove, unsuccessfully, with a jack-knife. Shortly after this he noticed a wart-like growth where the sliver had entered. Later he noticed a swelling about the middle joint of this finger. This was followed by a swelling in the palm of the hand which subsided some time after. About four years later he noticed other lumps on the hand. These appeared first as small raised nodules which were not painful or tender. For about a month they gradually increased in size but have not grown larger since that time. He next observed that the fingers of the right hand began to swell and become stiff. About a week before he reported for medical attention, he received a scratch on the second finger just at the middle joint. Three days later, he felt pain and tenderness in this area.

Examination revealed an adult white male of twenty-three years somewhat underweight and undernourished. His family history was negative. He stated that he had attacks of nausea and vomiting some time previously, accompanied by pain in the region of the appendix. Several erythematous patches were present on the skin, over the elbows, legs and back of the neck. The skin was quite dry. The cervical, submaxillary, axillary and inguinal glands showed some enlargement. The thyroid gland was palpable but no definite evidence of hyperthyroidism was present. The heart sounds were normal and the lungs showed no evidence of pathologic change. Examination of the abdomen revealed a slight tenderness over McBurney's point. No enlargement of the spleen or liver was detected. Temperature was 98.2. Pulse was 92, regular and of good volume, respirations 16. Systolic blood pressure was 120, the diastolic 90.

Scattered over the dorsum of the right hand and particularly around the joint region were several raised hard lumps. These were not painful or tender. They varied in size from a small pea to a walnut. On the tops of several of the larger-sized swellings were small whitish areas resembling pustules. The skin over the remainder of these lumps was quite dusky in color. The fingers were swollen about the middle and distal joints and were held in a position of semi-flexion. Digital motion was somewhat limited. There was very little loss of power in the hand. The second finger showed a small sinus at the middle joint, exuding caseous material and some purulent serum.

X-rays of this hand showed a very interesting condition. Scattered throughout the soft tissues of the hand, particularly about the joints, were many opaque areas, so massed in certain places as to throw dense uniform shadows. This was especially noticeable about the middle, proximal and the carpometacarpal joints of the second and third fingers and in the interosseous spaces as well. Smaller nodules appeared about the promixal joint of the index finger. The process extended also along the vessels in this area as well as about the proximal phalanx of the thumb. A deposit appeared also in the area between the radius and ulna reaching up into the arm for a distance of five or six inches. About the middle joint of the ring finger was a uniformly dense shadow with a well-rounded outline. Clinically this was a fluctuant swelling. X-rays of the remaining skeletal structures showed no abnormality except in the terminal digits of the middle, ring and little fingers of the left hand which were contracted from an old injury. No areas of bone absorption were observed.

Fig. 3. Plates taken in January, 1933, six years later, showing marked disappearance of calcium deposits from the hand and also the increased deposit in the arm.

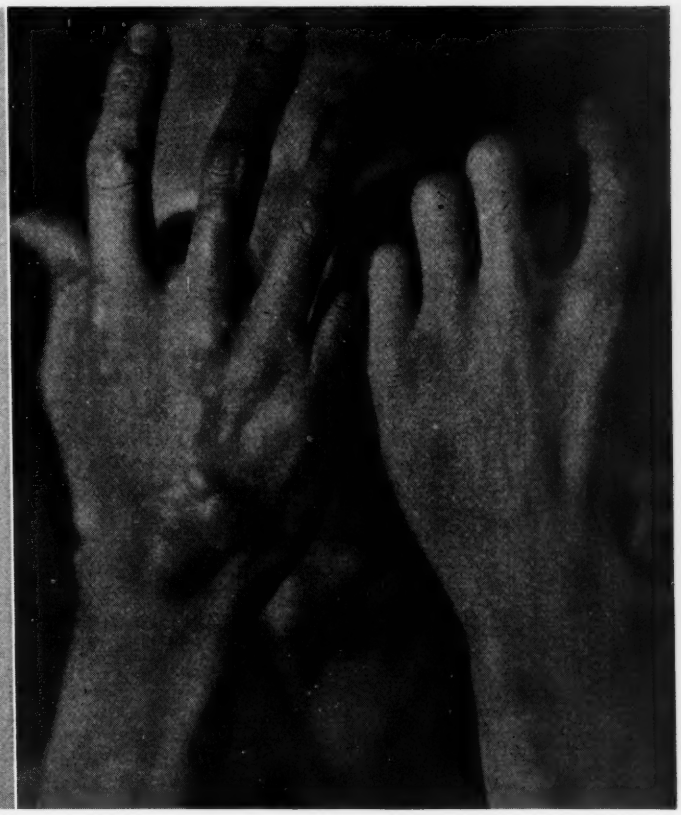

Fig. 4. Photograph of hands taken in January, 1933, six years later, showing typical nodule on dorsum of right hand.

The white cell count was 6,500. Blood smears showed a rather large percentage of lymphocytes. Blood Wassermann was negative. Smears from the sinus showed intracellular and extracellular diplococci. No acid-fast bacilli were found. The urine showed no sugar and no albumin. Blood was taken for calcium determination at this time but unfortunately the specimen was lost in transit.

The patient remained under treatment for a period of several weeks, during which time one or two of the fluctuant areas were incised and drained. From each of these areas about a teaspoonful of chalky-white material of the consistency of cream was evacuated. There were numerous firm caseous particles present. The wounds were curetted, packed with iodoform gauze and allowed to heal by granulation. Healing was prompt and there was no recurrence. Following this the patient failed to report and he was not seen again until January, 1933. The patient is now twenty-nine years of age, weighs 126 pounds, and states that he feels quite well. (His previous weight at the time of his first examination was 103 pounds.) At this time, examination of the right hand showed one large nodule, on the dorsal surface, which was freely movable under the skin. Other small nodules appeared on the fingers and about the joints. These, however, were not as marked as when last seen. No recurrence was manifest in the areas which had been drained and curetted and they appeared quite normal. There is a firm ridge along the dorsum of the right arm which was not evident five years ago except as shown by the x-ray as a beginning process. X-rays of the hand are in marked contrast to those of 1925. The deposits in the fingers and also the hand have cleared up almost entirely with the exception of an area at the base of the third and fourth metacarpals. The deposit along the dorsum of the forearm, however, is more marked. With the disappearance of the calcium deposits throughout the hand, there has been a corresponding improvement in function. The patient is now able to flex and extend the fingers completely, his hand feels much stronger and for the last three years he has been able to operate his machine without trouble. His general physical condition has improved considerably.

During this six-year interval, no attempt at treatment other than the original drainage of the fluctuant areas has been made. A calcium determination at this time showed 14.7 mgms. calcium per 100 c.c. of blood.

SUMMARY

1. A case of extensive calcinosis of the right hand and arm, observed over a period of five years, showed remarkable improvement without treatment.

2. Appearance of the deposits following the removal of a sliver with subsequent infection, suggests this as a possible etiologic factor.

3. Improved function in the hand corresponded with the disappearance of the deposits.

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THE CONSERVATIVE TREATMENT OF GAS GANGRENE INFECTIONS

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Since 1853, when Maisonneuve[1] first described the condition which he named "Gangrene foudrayante," and which is now known to be the clinical entity of gas gangrene, great interest has been manifested in this condition. Of late years, especially during and following the Great War, the reports of many wounds infected with a gas-producing organism has led to considerable investigation as to the causes and treatment of this infection. If we read the history of cases infected with gas gangrene treated fifteen years ago, and compare with similar cases treated today, we will realize the change that has occurred leading to more conservative treatment. It is the purpose of this paper to give a brief outline of the pathology, diagnosis, and treatment of this condition, and report in particular two cases which were treated with gas gangrene antitoxin and conservative surgery.

While most cases of gas gangrene are found following wounds of one or more of the extremities, the condition may also occur subsequent to appendectomy, herniotomy, and other operations performed on organs in close proximity to the intestinal tract. In such instances the causative organism gains entrance to the wound from the alimentary canal. Another mode of infection which is often overlooked is through woolen clothing, as reported by Gage,[2] who has remarked on the seasonal incidence of the infection, most cases of this nature having occurred during the winter months when woolen clothing is worn. King,[3] in his article, has given a comprehensive review of the various organs which may become involved and also modes of infection.

The commonest mode of infection, however, is that following wounds sustained out of doors. These include such wounds as compound fractures, crushing injuries, and puncture wounds. As occurs in all these forms of injuries, dirt and organisms are apt to be forced deeply into the involved tissue. As a result a favorable field for the growth of the causative organism is established. The most commonly found organism is that known as B. Welchii (B. perfringens and B. aërogenes capsulatus). This organism was first isolated by Welch and Nuttall[4] in 1891 as a gas-producing organism in the blood stream, and since that time its definite relationship to gas infections has been established. The other most commonly found organism is that known as Vibrion septique, first isolated by Pasteur.

The infection is primarily one involving the muscle tissue. Where muscle tissue is abundant and subject to injury, an excellent field for the development of the gas-producing organism is supplied. The devitalized tissue allows growth of the anaërobes and the infection rapidly spreads from the crushed tissue to the adjacent healthy muscle. The rate of spread will depend to a great degree on the virulence of the organism, also on the general resistance of the patient.

Keeping in mind the type of wound in

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which the infection is prone to occur has led to much earlier diagnosis and better final results. With a history of this type of wound we should keep very careful watch of the patient for the first twenty-four to seventy-two hours. One of the earliest and most important symptoms is that of pain. As will be seen in one of the case reports, this was the first symptom to direct attention towards the possibility of gas infection. Other early signs are rapid pulse and elevation of the temperature. Early blood count will show a leukocytosis and increase in the polymorphonuclears. A few hours after the onset we will get the first evidence of gas formation in the tissues. This may be quite localized at the beginning, later spreading and giving rise to the typical crepitation so often found. Providing there is an open wound, the formation of gas with the attending muscle destruction will give rise to the peculiar odor which has often been described as "mousy." On examination of the affected area we will find a peculiar brown pigmentation of the skin.

In addition to the above local manifestations, the patient will probably be markedly toxic, but still, as is peculiar in this type of infection, quite bright mentally. If the condition continues without adequate treatment, it is striking the extreme degree of toxicity which may develop in a few hours.

If we suspect and are reasonably sure of the diagnosis, we should not wait for the positive identification by culture of the causative organism. It has been reported that at times the culture will be negative (due, some believe, to the early administrative of antitoxin) but in most cases the causative organism will be found. Culture is made on a dextrose-containing medium and in about ninety per cent of the cases will show the presence of B. Welchii. However, our aim should be to diagnose the condition very early in its course, and it is only by so doing that the more conservative treatment will improve the final results.

As in any other condition, the first form of treatment we should consider is that of prophylaxis. This will be made possible if we bear in mind the type of wound in which gas-producing anaërobic organisms may flourish. When such a wound presents itself, it should be our duty, besides doing a thorough debridement and giving a prophylactic dose of tetanus antitoxin, to also give a prophylactic dose of gas gangrene antitoxin. This is now facilitated by pharmaceutical houses putting on the market a combined package, containing in one vial tetanus antitoxin and gas gangrene antitoxin (Perfringens antitoxin and Vibrion septique antitoxin).

The next step in the treatment should be the careful watching of wounds that may be infected, and interference at the earliest sign of gas gangrene involvement.

The definite diagnosis having been made, immediate surgical drainage should be established by multiple long incisions over the limb and the separation of the muscle bellies by blunt dissection. At the time of operation, Dakin tubes should be inserted to allow for later irrigation with potassium permanganate solution, Dakin's solution, or other solutions according to the individual preference of the attending surgeon.

Immediately following the operation gas gangrene antitoxin (combined) should be given. The usual first dose is 10,000 units, and for the best results this should be given intravenously in saline. A rather severe reaction may occur but as a rule this lasts for only a short time. Following the intravenous dose, the antitoxin should be repeated at intervals of eight to twenty-four hours, depending on the individual case. These subsequent doses are usually given intramuscularly.

In addition to the above specific treatment, general care consists of supportive measures, the attention to elimination, and the forcing of fluids. If there has been extensive destruction of soft tissue, it may be necessary at a later date to resort to skin grafting to close over the defects.

The following two case reports are given to illustrate a method of handling such an infection.

Case 1.—H. C., a teamster, aged forty-two, was admitted to Harper Hospital at 8:30 p. m., April 25, 1931, with the following history.

At 4:15 p. m., on that day, the patient's team ran away and he was thrown to the ground, striking against a lamp post. He was taken immediately to Receiving Hospital, where first aid was rendered for a compound fracture of the right forearm and abrasions of the face. Following debridement of the wound of the forearm, the lacerations were closed with silkworm gut sutures. He was given 10,000 units gas gangrene antitoxin and 1,500 units tetanus antitoxin intramuscularly.

On transfer to Harper Hospital general condition of the patient was fair and he was quite comfortable, having a supportive plaster mold on the right arm. Temperature on admission was 98.8 and pulse was 90.

On April 26, x-ray examination of the skull re-

vealed a linear fracture in the right temporoparietal region, and multiple comminuted fracture of the right ulna. At 12 noon temperature was 100, pulse 96, and patient comfortable. Moderate pain developed in the right forearm during the evening and when seen at 11:30 p. m. of the same day, thirty-one hours after the accident, the pain was severe. Temperature was 101.5, pulse 112, and patient was beginning to show signs of toxicity. On examination, it was found that the fingers of the hand were somewhat swollen and cyanotic. The splint was immediately removed and we could make out a small area of subcutaneous emphysema. In addition to the presence of gas the typical "mousy" odor was noticed. There was no evidence of involvement of the upper arm.

The patient was taken immediately to the operating room, and operation was performed under nitrous oxide anesthesia. All sutures in the forearm were removed. Multiple longitudinal incisions were made in the forearm and also in the upper arm. The muscle bellies in the forearm were separated by blunt dissection and several Dakin tubes were inserted. At time of operation a culture was taken, and report from the laboratory at a later date showed the presence of clostridium novyi.

On the patient's return to the ward, at 1 a. m., April 27, 10,000 units gas gangrene antitoxin (combined) were given intravenously in saline. Several hours later, irrigation with potassium permanganate solution (1:5000) was begun through the Dakin tubes. At 8 p. m. of the same day temperature was 101.0, pulse 102, and general appearance of the patient was improved.

On April 28, antitoxin was repeated in the same dosage but was given intramuscularly. This was the last dose of antitoxin deemed necessary, and from this time on patient made gradual improvement.

His stay in the hospital was uneventful up to May 6, when excision of the necrotic muscle of the forearm was performed and a small loose fragment of the ulna removed. The patient was discharged from the hospital June 3, 1931, wearing a posterior plaster mold. Treatment from this time on consisted of dressings, and later the application of a splint to secure better extension of the fingers. When last seen, patient was able to do light work, although due to the extensive muscle destruction he had lost the power of abduction of the thumb, and also the power to fully flex the fingers.

An interesting point to be noted in the above case is that, in spite of the patient's having received gas gangrene antitoxin soon after the accident (within four hours), gas gangrene infection became established. However, it is important to note that this was given intramuscularly, and the effect was not sufficient to prevent the development of the infection. This patient received altogether 30,000 units of the antitoxin; 10,000 units by the intravenous route, and 20,000 units intramuscularly.

Case 2.—W. K., male, aged thirty-two, was admitted to Evangelical Deaconess Hospital December 25, 1930, with a history of having been run over by a car and sustaining injuries to both legs. Examination on admission revealed a fracture of the left femur at the junction of the middle and lower thirds, with considerable displacement of the fragments. There was also a transverse fracture of the left fibula. In addition, there was extensive soft tissue injury to the muscles of the posterior aspect of the right lower leg.

On admission temperature was 99.0, pulse was 100. Under ether anesthesia, skeletal traction with calipers was applied to the left femur and a thorough debridement and closure of the wound of the right leg was done. One thousand and five hundred units tetanus antitoxin were given.

On December 26, temperature was 102.2, pulse was 130. The patient was markedly toxic. Examination of the left leg disclosed a moderate amount of swelling. Patient complained of severe pain in the whole right lower extremity. On removal of some of the sutures there was found to be a small amount of gas present and the odor from the wound was suggestive of that found in gas gangrene infections. A diagnosis of gas gangrene was made, and immediately, under nitrous oxide anesthesia, multiple longitudinal incisions were made over the leg and also over the lower part of the thigh. The muscles of the calf were separated by blunt dissection and Dakin tubes inserted for later irrigation. Following the operation 10,000 units gas gangrene antitoxin (combined) were given intramuscularly. The same dose was repeated in eight hours, but this time the antitoxin was given intravenously in saline.

No further antitoxin was given and course was uneventful, the patient making a gradual recovery with, however, considerable loss of soft tissue of the calf of the right leg. On February 20, 1931, the calipers were removed from the left leg and a plaster cast was applied. On February 21, under local novocaine anesthesia, multiple Reverdin skin grafts were applied to the denuded area on the right leg.

Culture of the wound taken at time of operation showed the presence of clostridium Welchii.

The patient was discharged from the hospital March 14, 1931. Subsequent treatment consisted of dressings and attention to the fractured left leg. When the patient was last seen, in November, 1933, he was walking without a limp and had recovered full function of both lower extremities.

This patient received 20,000 units of the antitoxin, 10,000 of which were given intravenously, and the remainder given intramuscularly.

SUMMARY

1. It would seem advisable, in all wounds where there is a probability of infection with gas-producing organisms, that a prophylactic dose of gas gangrene antitoxin should be given in addition to the usually administered dose of tetanus antitoxin.

2. The early diagnosis and early treatment of these infections will result in the saving of many limbs which might otherwise require amputation.

3. It would seem that, for the quickest and most satisfactory results, the initial dose of gas gangrene antitoxin should be given intravenously.

4. While the use of antitoxin has a very definite place in the therapy, its use must be combined with early and thorough surgical measures.

5. Two cases of gas gangrene are re-

ported, who through the means of conservative treatment now have useful extremities.

I wish to take this opportunity of thanking Dr. A. H. Whittaker for the use of the above case reports.

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THE RELATION OF SYPHILIS TO SURGERY
A DIAGNOSTIC AND PROGNOSTIC PROBLEM*

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The manifestations of syphilis in the skin, the mucous membranes, the nervous system, the viscera, and the skeleton system, all are characterized by an extraordinary mimicry which makes not only for clinical interest, but frequently establishes fascinating problems in differential diagnosis.

For the most part, clinicians have concerned themselves with the examples of syphilitic mimicry as these apply to general systemic disease, neurological conditions, cutaneous manifestations and diseases of the eye. Relatively little has been written of the surgical aspects of syphilis and more particularly of the syphilitic as a surgical problem.

Broadly speaking, this subject may be discussed under three general headings or from three standpoints. First, the syphilitic active or latent with regard to his infection, and presenting acute or chronic surgical conditions. Second, the syphilitic with a surgical condition caused directly by his specific infection. And third, the syphilitic presenting conditions definitely due to his infection but which exemplify surgical mimicry.

Under the first heading, the syphilitic who presents acute or chronic surgical conditions, or, as it might be expressed otherwise, the surgical patient who, at the same time, has syphilis, we are confronted with the problem of the evaluation of a serious systemic disease which, under certain conditions, presents a definite contraindication to operative interference on the one hand; on the other, in the light of a great emergency, such contraindication may have to be disregarded for the time being. In either case, and irrespective of the duration and type of the syphilis which is present, the surgical prognosis and risk are definite factors to be carefully considered. It may, perhaps, be pertinent to discuss briefly the most frequent conditions which are occasionally met and in which the evaluation of a concurrent infection complicates an otherwise clear picture. Obviously, any surgical condition can occur and is occasionally met with in association with either acute or chronic syphilitic disease. Looking back over my own experience, the following have occurred most frequently: acute appendicitis; fracture and dislocation; otitis media and mastoid disease; trauma and wounds; acute gallbladder disease; and acute hyperthyroidism. Any one of these might be taken for a text as to the indications or contraindications in a particular case.

Let us consider, first, such conditions as above mentioned in the presence of an acute or relatively fresh syphilis. First, and of major importance, is the danger of such a case to the operator himself. Practically all of the accidental cases of syphilis which have occurred in surgeons and obstetricians have occurred from trivial injuries sustained during the operation on a patient who is in what might be termed the septic stage of his syphilitic infection. I can recall numerous instances of dentists, physicians and surgeons who have been infected in this way. Such contamination was certainly more common before the general use of rubber gloves, but it still occurs occasionally when the operator is injured by a tear or rip

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in the glove caused either by a needle or other sharp instrument. Such accidents are absolutely preventable in all but cases of extreme surgical emergency. The routine, careful physical examination of the surgical patient, and the preliminary biologic test of his blood would indicate, obviously, the presence of syphilis in the patient, and where an active infection is present, unless a great emergency exists, the patient can, in a short time, be properly fortified by treatment so that the risk to the operator is a negligible one. When the surgical indication is so acute that no delay is possible, the presence of an acute syphilitic infection calls for extreme care on the part of the surgeon lest he injure himself and subject himself to the danger of accidental infection. Where such injury occurs and the knowledge of the infection exists, it has been shown that the immediate application of a 30 to 40 per cent calomel ointment to the puncture wound is a reasonably safe preventive of infection.

Turning now to the patient, the existence of an active syphilis has a very definite bearing on his surgical prognosis; however, not so great a bearing as occurs in older latent or occult infection. However, in the septic period of the disease the surgical wound establishes a locus minoris resistentia, and in such an area, occasionally, sloughing or failure to heal can occur and from such an area a greater and wider dissemination and a greater virulence in the general infection occasionally takes place. Patients with active syphilitic infection, therefore, are urgently in need of specific treatment during convalescence, not only to insure a good surgical result but to avoid wider dissemination and more active manifestations of their syphilitic infection which occurs as a result of the surgical trauma. To sum up, therefore, active syphilis constitutes a temporary contraindication to surgical intervention. Where the latter is imperative through great emergency, vigorous treatment should be instituted immediately following operation and during convalescence, and especial care should be taken by the operator to avoid injury to himself, particularly such as occurs through a needle prick.

The patient whose syphilis is old, latent, or occult, presents a somewhat different surgical risk. Under these conditions there is very much less risk to the operator, although occasionally, accidental infection can occur under these conditions. A greater risk, however, obtains for the patient. There are many cases in which perfectly clean operative results could be anticipated in which the presence of latent and particularly untreated syphilis brings about embarrassing results through sloughing, non-healing, and the actual development of gummous syphilides in the operative field. These are occasionally extremely difficult to recognize by reason of the presence of secondary infection, and because their syphilitic morphology has been altered by the operative procedure. I have, many times, seen such conditions complicating abdominal operations of many types, operations on the long bone, on the bones of the jaw, particularly after extractions or following fracture. When recognized and properly evaluated, judicious treatment leads almost immediately to prompt healing, but frequently with cicatricial complications or residua which could have been avoided had the existence of the syphilis been suspected.

Cases of this kind are readily detected by the routine serologic examination of all patients prior to operation. This precaution is taken in many hospitals and should be universally insisted upon by the surgeon. It is, however, particularly in private practice that failure to employ the serologic test leads to later embarrassment. The finding of a positive test does not of necessity mean a contraindication to immediate surgical operation. The all-important question where such a finding occurs is a proper evaluation of the syphilitic infection which the positive test indicates. The first question to be ascertained is the duration of the infection, since, generally speaking, the older the infection the less important is it from the standpoint of the patient's surgical risk. The second question and of greater importance is whether the infection has previously been recognized and what the patient's background of treatment has been. If the infection has been present for many years, and the infection had been treated, particularly during the early years, in other words, if there has been even a fair background of anti-syphilitic treatment, the risk of untoward surgical result is very slight and, generally speaking, the operative procedure need not be delayed. If, however, there has been little or no background of treatment, and I may say that this is the most frequent occurrence, then unless the emergency is great, operative procedure should be post-

poned until the patient has been properly fortified so that together with a continuance of the treatment during convalescence, a happy surgical outcome can be anticipated. Our experience is that under these conditions two or three injections of arsphenamine and the simultaneous administration of either bismuth or mercury over a period of two or three weeks, suffices adequately to protect the patient against unhappy surgical result if the treatment is continued during the period of surgical convalescence. Under this régime I have never seen an old syphilis lighted up through surgical trauma, or a surgical wound complicated by a syphiloma. To sum up, complete success of operative procedures in cases in which syphilis exists without adequate treatment should have the operation deferred until a proper background of treatment has been established. Sero-positive cases in which a background of treatment exists may safely be operated upon, but they also should receive additional treatment during their surgical convalescence. The continuance of treatment supplementing the preliminary background will definitely prevent cicatricial and adhesive changes which frequently are caused by the residua of reëstablished syphilitic foci.

There is very little in surgical texts concerning surgical conditions caused directly by syphilitic disease. Generally speaking, these are usually late manifestations of syphilitic infection. Most common of all are those occurring in bones, in the form of syphilitic osteomyelitis and osteitis leading to very definite sequestration, and constituting surgical conditions which must be adequately met by the surgeon before antisyphilitic treatment can be at all effective. Next to osteomyelitis are the not infrequent mechanical obstructive changes which are the result of old syphilitic disease, and which by reason of their position occasionally lead to serious dysfunction or obstruction which must be surgically relieved. Such are the occasional strictures of the esophagus, syphilitic strictures of the rectum, and adhesive peritonitis particularly affecting the large bowel. A third condition somewhat more rarely met with is gummous arthritis or osteoarthritis occasionally uncomplicated, but at times associated with infection of the joint. And lastly, cases of acute hyperthyroidism which appear definitely to be due to syphilitic disease.

The last named constitute the exception to the rule that the syphilitic surgical conditions are usually late syphilitic sequelæ. The occurrence of syphilis and hyperthyroidism is usually the casual coincidence of two common diseases. There are, however, a few cases in which coincident with the septic period of syphilitic diseases there occurs the acute onset of symptoms of hyperthyroidism indistinguishable from those of the ordinary type of case. There are two possible interpretations of such cases. First and probably more frequent, that the syphilitic infection has been the insult which in a potential hyperthyroid case activates the onset of symptoms. Under these conditions the syphilis would differ in no way from ordinary acute infections or from emotional or psychic traumata as etiological factors.

There are, however, a few cases which I have seen in which the institution of antisyphilitic treatment has brought about so prompt a disappearance of all the symptoms that one can only ascribe the hyperthyroidism in these cases to an early syphilitic thyroiditis. In a few of these cases the emergency was so great that operative interference was contemplated. The happy results achieved by constitutional treatment directed to the syphilis in this group lead to the suggestion that where acute syphilis and acute hyperthyroidism coexist, the possibility of a syphilitic thyroiditis must be kept in mind and operative interference can at least be delayed in such cases until the few days necessary can determine whether the syphilis is a casual or a causal factor in the hyperthyroid state.

With regard to osteomyelitis, while this occasionally occurs in the long bones, it is preëminently a morbid picture seen in the bones of the skull and particularly in those of the nasal cavity and the floor of the mouth. For some reason, syphilitic osteomyelitis of the bones of the skull involving the parietes and frontal bones was far more common years ago than it is today. However, one still sees not infrequently definite sequestra in these locations with extensive bony destruction which, if treated surgically alone, are constantly progressive. On the other hand, if treated merely as syphilitic manifestations they also defeat the most energetic therapeutic efforts because of the need of simultaneous surgical intervention. Such cases as these require the concerted and intelligent efforts of both the syphilologist and the surgeon and under these con-

ditions they invariably lead to a happy result. In more remote instances the condition also exists in the bone of the jaw or ribs, the clavicle and sternum and, more rarely, in the vertebral column. Under the latter condition the gummous spondylitis closely resembles the picture of tuberculosis and constitutes an occasional difficult differential diagnosis.

The mechanical obstructive changes such as strictures are seen most commonly in the large bowel and more rarely in the esophagus. The hour-glass stomach is also an example of such mechanical change due to gastric syphilis. Such lesions are the end effects of syphilitic disease which are in no way influenced by anti-syphilitic treatment but which require surgical intervention when they produce obstructive symptoms. While they, themselves, are unaffected by anti-syphilitic treatment, such should be given when surgical intervention is done to prevent the appearance of new lesions or surgically induced syphilomata which could occur as a result of surgical trauma in untreated individuals.

It was formerly believed that most strictures of the rectum could be ascribed to syphilitic disease. Late investigations have shown, however, that many such previously regarded syphilitic strictures are due to tropical lympho-granulomatosis, a venereal disease of non-syphilitic nature. There are, however, still remaining a number of rectal strictures which are the sequelæ of slow-healing ulcerative gummous proctitis.

Very little recognized is the association of plastic peritonitis in latent syphilitic individuals following abdominal operations. I have not seen this reported elsewhere, but I am quite certain, from my own observations, that the occasional occurrence of peritoneal adhesions, which later give rise to pain, occasionally to definite intestinal obstruction, can be ascribed to the presence of unsuspected latent syphilitic disease.

I have particularly seen this occur in cases of cirrhosis, and following operation for gastric disease, either ulcer or cancer, where the condition was later determined to be either gastric or perigastric syphilis.

Such forms, however, of plastic peritonitis due to visceral syphilis need not follow operation, but frequently occur during the course of chronic syphilitic disease, particularly of the liver, stomach and spleen, and are not infrequently found when the patients are operated upon for one cause or another.

I should like to turn now to the syphilitic conditions with surgical mimicry. These perhaps constitute the most important phases of the surgical aspects of syphilis, inasmuch as they are frequently the source of error in diagnosis and lead to surgical attack where this is entirely unnecessary. First and foremost is the mimicry which exists between the chancre and the cancer. How many surgeons of long experience can say that they have not fallen into error in mistaking the primary lesion of syphilis for a cancer when this occurs on the lip or tongue or the breast?

In the days before the discovery of the spirochete and before the introduction of the diagnostic blood test, there was perhaps some excuse for an occasional error of this nature. In these days where the clinical diagnosis can be substantiated by such accurate methods of determination, the removal of a breast, of the tongue, of the lip, or the penis when syphilis is mistaken for cancer constitutes an inexcusable error. The time is too short to enable me to elaborate upon the clinical differential diagnosis between the genital and extragenital sore, and the cancer in the corresponding area. In the main, there are sufficient clinical criteria to enable the careful diagnostician to make a diagnosis without laboratory aid. There are, however, occasional cases in which the traumatized chancre can so closely simulate the cancer, that the most careful clinical analysis fails to establish clear differential diagnostic criteria. Under these conditions the laboratory aid, with the demonstration of the infecting organisms or the biologic test, or both, as well as the biopsy, will serve to prevent a serious error in diagnosis. In the case of the finger chancre, the majority of cases which I have seen have all been mistaken for some form of paronychia and have been incised or otherwise surgically treated. In this connection it may be recalled that a surgeon of national repute lost his life from the failure of his colleagues to recognize an insignificant chancre of the finger. He was operated on for suspected breast cancer with axillary adenitis, which of course later was determined to be a syphilitic satellite bubo.

Of great interest are the occasional cases of gummous lymphadenitis affecting particularly the glands of the neck and simulating

closely tuberculous disease. The points of differentiation clinically are not very clear cut. Nevertheless, they are sufficiently definite, together with the laboratory diagnostic criteria, to enable one to establish a diagnosis if sufficient time and thought be given to it. I have seen gummous lymphadenitis also confused with Hodgkin's disease and lymphosarcoma.

Syphilis of the long bones simulating either tuberculosis or sarcoma are also excellent examples of syphilitic mimicry in a definite surgical field. Together with these are those cases of syphilitic periostitis, particularly those on the tibia, on the radius and ulna, clavicle, ribs and sternum, which frequently are incised in the belief that they are some form of septic or pyogenic disease. In connection with the bursæ, it should be remembered that the prepatellar bursa and that over the olecranon are peculiarly disposed to gummous involvement, and as they are also frequently the site of traumatic bursitis an obvious confusion as to their nature can exist.

Of paramount importance are the various forms of gastric syphilis. These occur in the form of round and serpiginous ulcer and of gummous tumor simulating cancer.

Clinically and even from the standpont of the x-ray, there are no adequate criteria to establish the differential diagnosis between the various forms of gastric syphilis and other forms of gastric pathology which they so closely simulate.

Syphilis may produce a round ulcer either by thrombosis and infarction, or by gummous ulceration which is indistinguishable from peptic ulcer. The more diffuse form of ulcerative gastritis due to syphilis is clinically indistinguishable from other forms of ulcerative gastritis. Solitary massive gummas of the gastric wall present the typical picture of gastric neoplasm.

For the most part, the diagnosis of these forms of syphilitic disease is an operative, pathological or postmortem finding. They constitute the most striking examples of syphilitic mimicry.

In a syphilitic individual, the occurrence of gastric disease which proves unamenable to the accepted forms of treatment should always be investigated with the possibility that one may be dealing with one of the many forms of gastric syphilis.

Lastly, reference might very profitably be made to the various manifestations of neurologic syphilitic disease which present conditions not infrequently mistaken for surgical indications. Of greatest frequency are the gastric crises, the abdominal crises, hepatic and gall-bladder pain, crises involving the uterus and bladder, all due to tabes dorsalis and all of them occasionally surgically treated by reason of their simulating various forms of the acute abdomen.

What surgeon of long experience has not at some time operated for what he believed to be gall-bladder disease or gastric disease to find a completely negative abdomen and no findings to substantiate a sharply localized pain and abdominal distention which so eloquently bespeak the acute abdomen? It is no uncommon finding in old tabetics to ascertain the history of surgical intervention and to find the telltale scars indicating operative interference. I have many times seen tabetics who have had not only such exploratory operations, but who have had gall-bladders removed or drained, or who have had gastro-enterostomies performed, needless to say with no relief of the symptoms for which they were operated upon. Cases of this kind are frequently more or less obscure cases of tabes, in that they are not ataxic individuals. The finding of greatest importance in establishing the true nature of such conditions of surgical mimicry are the eye findings. I think it is a safe statement that no case of gastric, abdominal or other form of tabetic crisis occurs without pupillary disturbance which would enable a diagnosis of cerebrospinal disease to be established. Of secondary importance, but also frequently present, are the condition of the tendon reflexes and other neurological findings of the motor and sensory systems which for the most part can be determined, together with the blood and lumbar puncture findings which substantiate, from the laboratory, the clinical picture of tabes.

In conclusion, a word might be said on the other side of the picture. Too much importance need not be placed upon a positive blood finding as necessarily indicating the syphilitic nature of an apparent surgical condition. In the main the association of such a finding with a surgical condition is a casual rather than a causal one. However, a proper evaluaton of the patient's existing syphilis as affecting not only the diagnosis but the patient's prognosis from the standpoint of his surgical condition, syphilitic or

otherwise, is well worth careful study. A proper appreciation of the rôle of syphilis as both a causal and casual factor would lead to happier end-results, less accidental infection, less unnecessary intervention, and a clearer concept of the devastating effect which, through its ubiquity, syphilis may have on other morbid processes.

CORONARY THROMBOSIS (THE ACUTE INDIGESTION OF YESTERDAY)

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Every year much has been written about acute obstruction of the coronary arteries since the first important and satisfactory account of its clinical features was published by the Russian authors, Obratzow and Straschesko,[14] in 1910. Herrick[2] of Chicago, in 1912, first focused the attention of the American medical profession on this condition by emphasizing the fact that coronary thrombosis is a disease entity and as such can be recognized during life and need not necessarily prove to be fatal. Libman[12, 13] in his writings appears to have been familiar with this symptom-complex at about the same time and Levine[11] diagnosed a case ante-mortem in 1918. The clinical and pathological findings[18] have been well described by White, Levine, Christian, Wearn, Krumbhaar and Crowell, Benson and Hunter, Willius, Gordinier, Parkinson and Bedford and others. Since the war, the literature on coronary disease has been very extensive and gradually, from this mass of observation, experimentations, and post-mortem examinations, much knowledge has been derived by which the disease can and should be recognized in the majority of instances.

In the infancy of our knowledge of the disease, the condition was of more interest to the pathologist than to the clinician. At the present time, although the clinician very often overlooks the condition, there is a tendency on his part to consider this too frequently, losing sight of the fact that there are many differential diagnoses, such as: gall stone pain, perforating peptic ulcer, acute pancreatitis, angina pectoris, pneumonia, pericarditis, pleurisy, tabetic crises, etc. All these may have common findings but usually each symptom-complex presents distinctive features. A careful history is essential and often some symptom referable to the heart may be elicited. It is important to remember that not infrequently no previous symptoms have ever been noted by the patient. Again, it is necessary to be ever watchful of cases where the pain has not been very severe as in hypo-sensitive people or in people with congestive failure with arrhythmia.

A discussion of the etiology and pathology, sex and age incidence will not be attempted here. Suffice it to say that the most common site for thrombosis is about one centimeter below the mouth of the descending branch of the left coronary artery, "the artery of death," producing an infarction in the left ventricular wall near the apex. Cardiac infarction has been reported in infancy[17] because of an infectious embolism and has been found in a youth[6] under twenty years of age, so that substernal pain at any age should make one think of coronary disease.

There is no fixed clinical picture of sudden obstruction of a coronary artery any more than there is of an obstruction of a cerebral artery. The triad of symptoms:[7] severe lasting retro-sternal pain, dyspnea and orthopnea, and gastralgia—have been added to from time to time until now we have a greater knowledge with which to approach and aid the present day patient.

We are called to see a patient (much more frequently a man and, by statistics,[1, 7, 22] usually after mid-life) who upon questioning is found to be suffering with extreme substernal and epigastric oppression, the typical "acute indigestion" or "ptomaine poisoning." The call is usually at night because coronary accidents occur fre-

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quently when people are at rest, in contradistinction to angina pectoris, which is generally brought on by effort.

The patient has dyspnea which may vary from slight breathlessness to cardiac asthma. Cheyne-Stokes respiration may also occur. Frequently at first glance he looks very sick; has an ashen color or a rather characteristic sallow unhealthy tint of the skin suggesting sometimes slight jaundice or anemia; his face and hands are clammy; often he is covered with perspiration; he may be vomiting. He is moving about trying to find a restful position, which is quite different from the individual suffering with an attack of angina pectoris, who sits or stands motionless, an agonizing look on his face, waiting for the paroxysm to pass. It is best to leave the patient where found until carefully examined, and then, if the diagnosis of coronary thrombosis is made or there is a question of it, make him as comfortable as possible without moving him more than is necessary. If on the first floor in a house, the patient should not be moved up another flight to his bedroom until the shock from the attack has passed.

Examination.—On listening to the heart, it is noticed that the sounds are usually weakened, especially the first sound at the apex. Sometimes there is a tic-tac rhythm due to weakened first sound; re-duplication and gallop rhythm are not uncommon. Protodiastolic gallop rhythm is caused by an increased third sound which follows shortly after the normal second sound and is best heard at the apex or between the apex and the sternum; never at the base. This third sound is a very important sign[22] of weakness of the left ventricle and one that is often overlooked. The pulmonic second sound is accentuated and the aortic second sound is very weak or entirely lacking—a sign of a failing left ventricle and increased pulmonary tension. The heart often rapidly dilates, especially the left ventricle. This may be demonstrated by percussion or by roentgen ray. A functional systolic murmur due to the dilatation may be heard in the mitral area. A *pericardial friction rub* should be listened for carefully because it is often transient and may disappear after a day or two. The most common site to hear this rub is near the sternum, especially along the left border, but it may be found anywhere or everywhere over the precordium, and, if the rub is loud enough, may be widely transmitted to the back and elsewhere. There may be premature beats, partial or complete auriculoventricular block, paroxysmal or permanent auricular fibrillation, or paroxysmal ventricular tachycardia. The latter is of particularly ill omen, but, fortunately, quite rare. The *pulse* may vary from a marked tachycardia to a bradycardia, due to heart block, which is very rare as the infarct does not usually involve the region of the Bundle of His.

The *blood pressure* in coronary thrombosis, followed by cardiac infarction, usually falls. Afterwards, there is generally weakness, mental disturbance, faintness, dizziness and even syncope, coma, and convulsions. Congestive failure may ensue which produces râles, cough, hemoptysis, gastro-intestinal symptoms, ascites and edema. A fever of 100-101 degrees Fahrenheit is usually noted for a few days. Temperatures of 103-104 degrees Fahrenheit make for poorer prognoses.

It is well to remember that there is no antecedent history of disease of the circulation in 62 per cent[3] of the cases and that the immediate mortality is less than 20 per cent.[1] If the patient does not suddenly die because of a ventricular fibrillation, or because the area of infarction is not too large, or, if, in a few days, because of a rupture of the ventricular muscle through the infarcted area, or because of an embolus from a mural thrombus, the chances of recovery are probable if good care and common sense are employed. Morphine, and plenty of it, is the immediate treatment. Sometimes it may take a grain or more, in divided doses, before the patient is relieved; occasionally he is put to sleep by the drug before the pain ceases. One of the theophylline-ethyldiamine preparations (aminophylline, metaphyllin, euphyllin, etc.) may be given intravenously for its probable dilating effect on the coronary arteries, thus relieving some of the local anoxemia. Again, let it be emphasized; disturb the patient very little at this stage of the illness, relieve his pain and make him as comfortable as possible. The head may be very slightly raised and often a pillow under the knees is enjoyed by the patient. It is not necessary to give digitalis at once unless there is congestive failure, auricular fibrillation, or cardiac asthma, which is a sign of failure of the left ventricle. A fluid diet in small amounts is to be recommended for the first few days. Intra-

venous injections[18] of 50 per cent buffered glucose solution (50-100 c.c. daily for several days) is nourishing to the injured heart muscle and may be helpful. Let the bowels go for a few days; don't give enemas until the shock has passed. Too much bathing is often very tiring. "Masterful inactivity" is the watchword. If dyspnea or cyanosis be present, an oxygen tent may aid in making the patient more comfortable, if it causes no unfavorable mental reaction.

Electrocardiographic study generally helps to diagnose, localize, and indicate duration of myocardial infarct. Its use in middle aged patients with mild substernal symptoms, difficult to evaluate, is often diagnostic. Usually it shows some abnormality of the T-waves, but the actual picture of a coronary occlusion often does not appear for several days.[4] The electrocardiogram may show within twenty-four hours a low or flattened T-wave, or again a high take-off and a peculiar rounding of the T-wave[15] (described by Pardee); later, a peculiar V or cone-shaped inversion; intraventricular block (the commonest cause[22] of which is coronary disease) which is noted by a spreading of the QRS complex with, or without, notching; low amplitude of ventricular complexes; alternation in auriculoventricular conduction; and left axis deviation. The prominent Q3-wave,[5] which formerly has been interpreted as helpful in the diagnosis of coronary occlusion, is now stated by Hurxthal generally to be an inverted R phase of the QRS complex. Any of these points, singly or collectively, may arouse one's suspicions and aid in the diagnosis of coronary thrombosis. It is often of interest, and frequently of distinct value in diagnosis, to note the changes in the complexes in a series of electrocardiograms made daily or every second day.

While *roentgenological* study may show no abnormality, it generally presents cardiac enlargement and often a tortuous aorta. It is said by some authorities that the heart action may be weak if the patient is examined fluoroscopically, but it is very difficult to see any variation.

Usually a *polymorphonuclear* leukocytosis in a mild degree is found for two or three days and the grade and duration of leukocytosis on account of sudden cardiac infarction is a useful clew to the size of the infarct and, hence, to prognosis.

The *sedimentation rate*[16] is a good indication of the progress of the healing of a myocardial infarct for it remains rapid even after the white blood count and the temperature have become normal.

A rising *non-protein nitrogen,*[19] or a non-protein nitrogen that remains elevated in blood plasma, was noted in fatal cases and may be a dangerous sign as a lowering of the blood pressure, and a diminution in urine output will not alone explain the rise of non-protein nitrogen in acute coronary occlusion.

Each case is individual and must be treated as such. The prognosis depends not only on the degree and spread of the involvement of the myocardium, but also on the treatment and on the reserve strength of the heart. Careful nursing is a very helpful adjunct. After a few days, enemas and mild cathartics may be given if necessary. A liquid diet for several days is advisable as it is more easily assimilated. Levine[8, 9] suggests quinidine sulphate grains three, two to three times a day, as a precautionary measure, for ten to fourteen days in attempting to prevent auricular fibrillation and ventricular tachycardia. In the weakened state in which we find the heart muscle in a case of coronary thrombosis, such further insults are almost always too great to withstand. Perhaps even grains three every four hours night and day, as quinidine is excreted[20, 21] in that length of time, might cover the patient more effectively. The judicious use of alcoholic beverages[10] is to be considered. Blood pressure reading twice daily is a constant guide to the condition of the heart muscle.

A month to six weeks is the least time one should consider keeping a patient in bed, following such an accident, for the balance between too much and too little restriction of life must be established. Then gradually the resumption of activities may be undertaken. Patients have been known to carry on following coronary occlusion, and do it very well, for a period of ten years or more. It has been shown[1] that two years following a coronary occlusion, 56 per cent were in good health; in ten years, 3.4 per cent were still alive.

The prognosis is lessened in coronary thrombosis by the following findings:[22]

1. Advanced age.
2. State of shock.
3. Abrupt and pronounced fall in blood pressure.

4. Prolongation of severe substernal pain for more than two to three hours.
5. The duration of fever for more than a few days.
6. The presence of a high fever (103-104° F.) or a high leukocytosis (especially if maintained for a week or more).
7. Rapid and marked cardiac dilatation.
8. Gallop rhythm.
9. Ventricular paroxysmal tachycardia.
10. Heart block.
11. Pulsus alternans.
12. Cardiac asthma.
13. Congestive failure.
14. Embolic phenomena.

SUMMARY

With the present day available information, coronary thrombosis, which frequently presents symptoms suggesting acute indigestion, should be recognized in the large percentage of cases.

1. A careful history frequently gives the keynote of the diagnosis.
2. Thoughtful evaluation of the laboratory tests and electrocardiographic tracings are distinct aids.
3. It is suggested that digitalis be avoided unless there is congestive failure, auricular fibrillation, or cardiac asthma. Quinidine sulphate may be given in the attempt to prevent a cardiac arrhythmia and, hence, add further insult to an already damaged heart muscle.
4. Absolute bed rest is recommended for a period long enough for the damaged muscle to heal.
5. Prognosis should always be guarded for it is known that patients have lived more than ten years following a coronary occlusion.

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MICHIGAN'S DEPARTMENT OF HEALTH

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NEW LOW RATES FOR 1933

Birth, death, and infant mortality rates in Michigan again dropped in 1933, bettering even the record-breaking rates of 1932.

The death rate for 1933 was 9.6 per 1,000 of population, as compared with 9.7 for 1932. The number of deaths registered during the past year was 48,507, a decrease of 1,062 under the 49,569 reported in 1932. With the exception of 1918, the influenza year, the highest death rate for the past twenty-five years was 14.2. Since 1929 it has fallen steadily, reaching its lowest point in 1933. That a rate as low as the present one can continue indefinitely seems scarcely possible since it would presuppose that a material proportion of the population would live to be one hundred years and over.

The birth rate for 1933 was 16.0 per 1,000 of population in contrast to the 16.6 of 1932. The number of births registered last year was 80,481, a decrease of 4,773 under the 85,254 of 1932. Twenty years ago the Michigan birth rate was above 26

per 1,000 population, and as recently as 1927 almost 100,000 births were registered. The rate has declined more than one-third in the ten year period from 1924 to 1934. This downward trend of the birth rate has been general throughout the United States and in many foreign countries.

The infant mortality rate was 50.8 per 1,000 living births, in marked contrast to the 54.3 of 1932 and the 157.1 of 1900. The number of deaths of infants under one year of age in 1933 was 4,092, a drop of 538 from the 4,630 deaths in 1932.

Of particular interest in infant mortality was the fact that the rural rate decreased more than the urban one. The rural rate was 47.3 in 1933 compared with 54.4 in 1932 and the urban rate (cities of 2,500 and over) in 1933 was 52.5 in contrast to the 54.3 in 1932.

All but four of the larger cities of the state showed decreases in their infant mortality rates for the year. A number of the cities and their comparative rates follow:

	1933	1932
Ann Arbor	51.7	53.0
Battle Creek	56.0	69.6
Detroit	50.9	52.0
Flint	59.4	61.5
Grand Rapids	53.3	39.8
Hamtramck	67.7	43.4
Highland Park	26.6	48.3
Jackson	61.2	62.6
Kalamazoo	49.1	55.3
Lansing	63.1	50.6
Marquette	65.0	93.3
Monroe	40.2	41.0
Muskegon	46.7	55.2
Pontiac	50.7	57.7
Port Huron	66.5	47.9
Saginaw	45.8	65.4
Wyandotte	41.9	69.1

COMMUNICABLE DISEASE NOTES

For the first two months of 1934 the only disease showing any significant increase over the same period for 1933 was pneumonia. There is some question as to whether this increase has any great significance. There were 1,146 cases of pneumonia reported in 1934 as compared to 963 in 1933.

The total number of cases of scarlet fever for January and February is practically the same as for the same period in 1933. Both years have shown quite a high incidence. The communities affected are somewhat different this year as compared to last year. The larger population centers in this group are Flint and Genesee County, Muskegon, Kalamazoo County and Lansing. A number of other smaller communities have also been quite severely affected.

The incidence of smallpox continues extremely low. For the first two months of last year only four cases were reported. This year there has been a total of seven cases.

Although this is not the poliomyelitis season, there has been a slight increase in the incidence. This does not appear significant because of the small number. For the months of January and February, 1933, four cases of poliomyelitis were reported as compared to seven for the same period of this year.

Typhoid fever is slightly under the incidence of last year at this season.

Diphtheria is materially less for the first two months of this year, there being ninety-eight cases reported as compared to 185 for the same period of last year.

Whooping cough is somewhat under last year's record and measles shows about one case for every ten reported a year ago.

AMEBIC DYSENTERY

Cases of amebic dysentery which originated in Chicago during the summer season of the Century of Progress Exposition continue to come to light. Twenty-four cases have been reported in the state since January 1, 1934, making a total of sixty-five cases, of which forty-seven are thought to have acquired their infection in Chicago.

Physicians should remain on the alert and consider the diagnosis of amebic dysentery in all cases of more or less chronic enteritis, especially those showing a mucopurulent diarrhea and sometimes the presence of blood.

It appears that the cause of the Chicago outbreak has not been definitely settled. The explanation advanced and considered most probable by Chicago authorities is that of water pollution caused by a cross connection between water supply and sewage disposal in the basement of one of the Chicago hotels. This condition was remedied some time ago. We would call attention to the article on amebic dysentery in Chicago which appeared in the February 3 issue of the *Journal of the American Medical Association.*

C. D. B.

THE JOURNAL

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APRIL, 1934

EDITORIAL

A MATTER FOR SERIOUS STUDY

We have emphasized from time to time the importance of unity of the medical profession as evidenced by full and active county society membership. The times demand preparedness and this means an intelligent comprehension of the situation which confronts medicine today, along with other professional as well as industrial and economic activities. The problem is one of adjusting ourselves to conditions which few or none of us could have anticipated a decade ago. One may adopt a Fabian attitude and play a waiting game. That is what most of us have been doing—probably the easiest way, because standpatism requires very little mental effort. The alternative is to study the trend of the times. Individualist though the majority of us may be, a good mental exercise would be to inform ourselves on what socialism really means. The editor of the *Journal of the American Medical Association* in a recent address told us that of the twenty-two planks in the socialist platform of 1912, all but two had been already adopted. We are too prone to label what we don't like with a name and to leave it at that. The subject should be approached with as little emotion as possible, which is a difficult matter, however, considering that one's livelihood is involved; it is hard to be impartial where one's existence is at stake. Nevertheless the necessity is urgent.

We have no definite plan to offer, yet some definite proposition is necessary. The Michigan State Medical Society has been a pioneer among states to give the matter of survey of health agencies serious thought, as already made public in the carefully prepared report presented at the annual meeting at Grand Rapids, and the continuance of study of the problems by the committee on Medical Economics. A serious effort has been made to obtain first-hand knowledge of the social and economic phases of medicine as experienced in Great Britain. The findings of the Committee on Economics sooner or later will be presented to the House of Delegates, who, after mature deliberation, will doubtless have some concrete plan, or will determine upon some course of action.

We referred to the subject of socialism. Anyone interested in knowing what socialism really is cannot do better than study two books: one by Markham dealing with the *History of Socialism.* This is an impartial narrative by an Oxford scholar. It can be recommended as one of the best accounts in a single volume of a little over three hundred pages. The other, *Individualism and Socialism,* by Kirby Page, is a biased work, but is valuable for the doctor as it contains a vast amount of documented data, largely a criticism of the evils of capitalism. In our opinion a volume of equal size might be written setting forth the merits of individualism and capitalism.

However, one should bear in mind that whichever he favors, socialism or individualism, his position or mental attitude is never unassailable until he knows the arguments and can appreciate the attitude of his opponents. As already intimated, we are on the threshold of a new era in medicine as well as in human society in its broader aspects. The approach of the average thoughtful physician to the problems of his profession is beset with difficulties. He cannot long continue under present conditions. And yet any plan of medical service already in operation falls short of meeting the situation in anything like an ideal way. The objective is to render medical service of high quality at a price all can afford to pay, and at the same time avoid eliminating physicians from the practice of medicine at a time of life at which it is too late to turn to some other means of earning a livelihood. This causes many of the older men in the profession to approach the subject with a con-

servatism that shows little or no effort towards constructive action on any large scale.

The problems are too large, however, and the need for action too pressing to be postponed indefinitely.

MEDICAL SOCIETIES DELUXE

Our nearest neighbor, the *Journal of the Indiana State Medical Society,* contains a very interesting editorial on this subject. The county society is the long established unit in medical organization. It is the organization closest to the doctor, be he general practitioner or specialist. For this reason the JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY has always stressed the importance of a county society membership that embraces every eligible and qualified physician in the county. In the large centers of population, however, where doctors are more or less accustomed to limit their field of practice, there have sprung up special societies which are designated de luxe. There is a place for them, inasmuch as they are concerned with phases of medical and surgical practice of a technical nature which are not of general interest. The technic of a gall bladder operation would have very little appeal to the eye specialist and the dosage of treatment by x-rays or radium or the *modus operandi* of producing radiographs of diagnostic detail would be of no interest whatsoever to those physicians not actually engaged in radiology, hence the importance of the special group within the county society. The fact should not be forgotten, however, that all these institutions should be subordinated to active interest in the county organization.

Then again these auxiliary societies are wont to impose fees varying from five to twenty dollars on their members in addition to the regular membership in the county society, which is an unwarranted burden at a time when every physician and surgeon finds his income reduced by the amount of service he renders gratuitously. In the majority of these societies the only expense entailed is that of sending a letter or postcard each month to notify the members of the time, place, and program. Where such organizations are found a necessity an effort should be made to reduce the expense connected with them and their number should be sufficiently infrequent as to allow the physician an occasional evening at home with his family.

HOME CARE OF TUBERCULOSIS

It is unquestionable that a properly managed sanitarium affords the best advantages for the successful recovery of the tuberculosis patient. The reasons are obvious: equipment, a highly specialized medical and surgical staff, proper diet and rest. The means of accommodation, however, are still not adequate to meet demands, so that waiting lists are in many places the rule. Sometimes patients are required to wait from six to eight months for admittance, during which time the disease may gain so much headway that successful treatment is an impossibility. Such patients will require careful supervision and treatment in their own homes. Then there is the patient who has had sanitarium treatment, and the schooling that the institution affords, who may be safely dismissed but who requires to be kept under observation. Certain pneumothorax cases when they have had their "refills" may be treated satisfactorily at home. Where possible one to two months' sojourn in a good sanitarium is highly desirable to acquire the fundamentals, so that the patient may cooperate intelligently with the doctor.

An interesting brochure is being prepared on the subject of home treatment of tuberculosis patients, dealing with such subjects as patient's quarters, the patient, bed period, fresh air, cleanliness, diet, temperature and pulse. The brochure is being prepared by a committee of the National Tuberculosis Association consisting of Dr. A. M. Wehenkle of Detroit, chairman; Dr. Woods Price of Saranac Lake and Dr. D. R. Lyman, superintendent of the Tuberculosis Sanitarium of Wallingford, Connecticut.

This is in line with the movement towards the practice of preventive medicine by the general practitioner, and physicians are therefore urged to turn their attention to the care of this class of patient, which has been of recent years considered amenable to sanitarium management only.

MEDICAL HISTORY

The Woman's Auxiliary has grown to be an important institution in connection with medicine in Michigan. In addition to the social feature, which is very important, the record has been one of accomplishment. Mrs. J. M. Robb, of Detroit, conceived the idea of a plan of study of medical history by

doctors' wives, and under her direction a successful course has been presented to the auxiliary members of Wayne County. The large enrollment as well as attendance of members has proved beyond a doubt the popularity of the venture.

The auxiliary meetings were held on the same evenings as the scientific sessions of the medical society so that husbands and wives came together; each, however, attended his and her own program. The first series (we say first, for surely this is only a beginning of a number of such courses) constituted a survey of the subject from the earliest times to the renaissance. The course comprised six lectures given by well informed members of the medical society, namely, The Outline from Imhotep to Harvey by Dr. Lawrence Reynolds, Egyptian Medicine by Dr. Frank Sladen, Greek Medicine by Dr. E. D. Spalding, Roman Medicine by Dr. W. J. Stapleton, The Legacy of Arabian Medicine by Dr. L. M. Sa'di and the Italian Renaissance by Dr. H. W. Plaggemeyer. A number of the doctors, together with the editor, could not resist the temptation (surreptitiously of course) to occupy the back seats. Each speaker did himself justice and all the presentations were brilliantly prepared. At each successive meeting a member of the Woman's Auxiliary presented a synopsis of the preceding lecture which showed very commendable ability in grasping the salient features and in summarizing the address. The Wayne County Auxiliary is, we presume, the largest in the state. There is every reason, however, that smaller groups of women would find such courses fascinating and there are doctors everywhere who would be only too pleased to give the talks.

MAX BALLIN

When the medical history of the early periods of the twentieth century is written, no name will stand out in more heroic proportions than that of Max Ballin. Surgeon, Consultant, Pathologist, Citizen, he epitomized those qualities of mind and heart that only the truly great possess. The State of Michigan and the City of Detroit particularly, may ever point with pride to him as one who possessed those exquisite traits of leadership that made him a much honored member of the medical profession.

It would be idle to repeat in detail his achievements in the surgical field. Outstanding are these facts: that Doctor Ballin was one of the very first in the world to demonstrate the surgical indications of, and to operate upon, hyperplastic and adenomatous goiter; in the field of brain and cord surgery his pioneer work attracted wide attention; his last and great achievement was the demonstration of the relationship of the pathology of the parathyroid gland to calcium metabolism and diseases of the osseous system. All of these stand out as landmarks in his wide and colorful surgical career.

There was nothing of the trite in his investigations or writings. His contributions to surgical technique and medical literature were not great in number, but each and every one of them were original in their conception, or new in their method of approach. They displayed a profundity of knowledge, a carefulness of preparation and a sincerity of statement that only come from a man of great experience, of wisdom and of conviction.

The recognition of his worth was national, not alone through medals and citations, but references to his works that appear in surgical and medical literature bear testimony to this fact. In his own sphere Dr. Ballin imspired and stimulated his associates, who always found in him one eager to assist, advise and encourage. Withal he was gifted with a rareness of judgment possessed by few men. Whether at the bedside or in the operating room this ever stood out as one of the attributes of his ability.

There was a magnetic quality to his personality; his smile, his quick retorts, his genial quips, his lovable assurances were the outward expressions of a sturdy heart that beat with sincerity, sympathy and devotion. To these traits were added a dignity and modesty which not only attracted all who met him, but also endowed him with a power of true leadership.

The background of this noble character was a cultural life and sense of appreciation of its realities. Dr. Ballin was a great reader, not alone of medical and surgical writings, but of good fiction. Besides English and German literature, he was familiar with French and Italian, which he spoke fluently. He enjoyed art, but particularly was he fond of the best in music. In all of these he found much diversion and comfort during the few leisure hours that he had for himself in his busy career.

The loss that the medical profession and this community have suffered cannot be measured in words or spoken in any eulogy. Dr. Ballin will be missed more as time speeds on, and as we begin to realize that he will not return. And only then, when trying situations arise and difficult problems confront us, will we reflect, and recount those acts of judgment, those expressions of faith, that courage, sympathy, tact and sincerity which made him a tower of strength in our midst and endeared him to us.

SPECTACLES

The invention of spectacles may be traced to northern Italy in the last quarter of the thirteenth century. Although the details are unknown, it seems fairly certain that the discovery occurred between 1280 and 1290, and the best authenticated evidence accredits the invention to either Salvino degli'Armati of Florence or to Alessandro della Spina, a Dominican monk of Pisa. Outside of Italy, glasses were used in China at about the same time, and there is some evidence to indicate that the Chinese invention was as early as the eleventh century. The establishment of any definite date, however, is impossible at present. Although the difference in the design of Chinese glasses attests to their independent development, they are of only casual historical interest, since they seem to have had no influence on the evolution of European glasses. With the establishment of regular commercial relations between the East and the West, the superior spectacles of European manufacture soon superseded the native Chinese product.

Glasses as aids to vision were a natural outgrowth of the studies of Grosseteste (c. 1175-1253) and the other thirteenth century scholars, Witelo, Peckham, and Roger Bacon. These men analyzed the Greek and Arabian theories on visual and luminous rays together with the early work of Galen and Ibn al-Haitham on the eye, and of Ptolemy and Euclid on the principles of refraction and reflection. Experiments with burning glasses showed that print was magnified through their use, so that, in a sense, the adoption of lenses of low convexity for the correction of old age visual defects was an adaptation, rather than the discovery of a principle.

Since convex lenses were the first type to be used, glasses for the correction of presbyopia preceded other kinds. Commonly in fitting glasses, lenses of several distinct degrees of convexity were employed, the more convex grades being prescribed in relation to the increasing age of the wearer. In the first systematic treatise on spectacles by Benito Daca de Valdez (1623), it appears that lenses of still greater convexity were in use as cataract glasses. Concave lenses which had been known since the time of Bacon subsequently came into use. A remark by Cardinal de Cusa (d. 1464) and another by Barbaro (1568) indicate that they were in use during the lifetimes of these men, although the first clear description of concave lenses was that of John Archbishop of Canterbury in 1593.

The clergy seem to have been the first spectacle makers, though guilds of laymen were probably the first extensive producers. The spectacle makers' guild of France was in existence in 1465 and that of England by 1563. After the decay of the guilds, mendicant peddlers provided glasses, but from the seventeenth century on, the optician became the most important agency for distributing glasses.

Glasses during the first decades of their use were made of ground and polished transparent gem stones, such as topaz, rock crystal, or most frequently beryl. These reading stones were thought to be the only lenses which would not injure the eyes. The prohibitive cost of reading stones led to the introduction of glass lenses, but makers of lenses were compelled to indicate the presence of the presumably inferior material in their product. The early glass was a mixture of substances, the characteristics of which varied from sample to sample. The mineral impurities led to opalescence or colored tints, and pure silicate glasses, such as crown and flint, were not available before the eighteenth century. The conscious introduction of specific impurities into the glass produced glasses of definite color. Reading glasses with green lenses were manufactured in 1561 by the Englishman, Aucott; Pierson of London sold blue reading glasses; and Adams in 1767 advertised smoked glasses. During the nineteenth century, amber lenses, chlorophyll green and amethyst glasses were produced till, at present, many colors and varieties of glass are used in lenses.

The early convex and concave lenses un-

derwent little modification until the eighteenth century. In 1784, Benjamin Franklin produced bifocal glasses in which the upper half of the lens was adapted for far vision and the lower half for close accommodation. Various technical refinements of the bifocal principle appeared somewhat later. In 1826, Hawkins of London devised the less commonly used trifocal lenses. In 1866, Samuel Gregg produced a bifocal by cementing a small segment into the lower part of the distance glass. Later, a thin scale with a knife edge was cemented with balsam to the surface of the distance glass as a modification for close focus. This glass, known as the *opifex,* was modified about 1890 by Borsch of Philadelphia to form the *kryptok* lens. In this, the thin scale was cemented between two large pieces of glass. Shortly afterward, Borsch fused the glass by heat, the difference in refraction of the two parts of the lens being produced by the use of both crown and flint glass. Still more recently, the two parts of the bifocal lens have been ground from one piece of crown glass.

Since the adoption of glasses for the correction of myopia and presbyopia, the most important innovation for the improvement of vision has been associated with the correction of astigmatism. In 1801, the characteristics of astigmatism were first outlined by Thomas Young. He found that astigmatism could be corrected by tilting the lenses of the glasses in one direction or another. Independently and about twenty-five years later, George Airey worked out the method of compensating for astigmatism, and in 1827 the English optician, Fuller, provided him with cylindrical lenses. Lenses of this type were soon common, as were spherocylinders, which were first produced by the American optician, Zentmayer.

Wollaston in 1804 devised the first periscopic eye-lenses, which were constructed for him by Dollond. This glass was designed to obviate the necessity of looking obliquely through the peripheral part of the ordinary lens and consisted of a lens with an anterior convex surface and a posterior concave surface. Somewhat later, the grinding of periscopic lenses for the correction of compound astigmatic and accommodatory defects led to the type of lens called *toric.* Some attention has been given to glasses for the correction of grosser eye defects. The use of prisms for the correction of squint was suggested during the middle of the nineteenth century. Hyperbolic lenses for conical cornea and irregular astigmatism were proposed in 1879 by Raehlmann. For the correction of extreme myopia or hyperopia, lenticular lenses in which the correction lens occupies only the central part of the glass have been devised. Bifocal cataract glasses were another development for unusually defective eyesight.

Various shapes of lenses have been popular. The earliest lenses were circular and later elliptical, and, although the oval or elliptical lens has remained the most popular type, many irregular shapes, such as crescents, octagons, or circular lenses with flattened tops, have also been common. The size of lenses and the materials for the construction of frames have been considerably modified in accordance with style trends.

If attention is turned to the method by which lenses are held before the eyes, it is to be noted that there is a gradual adaptation of frames to the anatomy of the nose and face, and likewise that popular fancy has led to the predominance of one type or another at various times. The first glasses consisted of two large lenses conjoined by an immovable frame of leather, bone, ivory or metal. These were held in the hand by the upper or lower portion of the rim. Sometimes glasses were suspended on cords over the ears. A modification of the solid construction of the frame appeared during the fourteenth century when the two lens glasses were hinged over the region of the nose, or were connected by a piece of spring metal. About the middle of the eighteenth century, crude glasses maintained with bows or temples, technically spectacles, were constructed. At first, the temples ended in a plate or ring in front of the ears, while later, they extended behind the ears to press against the occiput. Next, a short piece of metal was jointed to the temple in such a way as to hook behind the ear. With the hingeing of the bows to the spectacle frame to permit folding, spectacles not unlike the modern types came into use. Rimless spectacles, in which the bridge and bows were clamped and screwed to the lenses, were constructed about 1840 by Waldstein of Vienna. Rimless spectacles with hook temples called "riding bows" appeared in England about 1850. The later adaptation of a saddle bridge to distribute the weight of the spectacles on the nose and the offset

guard led to essentially modern spectacles; the most recent developments have been the perfection of movable guards on a semi-flexible bridge and the higher placement of the bows on the lens.

During the past century, glasses without bows, technically called eyeglasses, have vied in popularity with spectacles. The problems of eyeglasses have centered on the lightness of weight and ease of attachment to the nose. The American opticians have in large part been responsible for the technical advances in eyeglass construction. In 1868 McDonald of Newark and Bausch of Rochester devised eyeglasses which were clamped to the nose by a spring arrangement. Self-adjusting guards with a nose-piece oscillating upon a pivot attached to the eye wire were invented by Clements in 1871. Other rocking guards were constructed during the next decades, along with devices for holding the glasses with precise adjustment before the eyes. The more recent developments of eyeglasses have followd two lines: in the first, the glasses are maintained by the springiness of the bridge; in the other, the bridge is stationary while the guards are movable. In the latter, or finger-piece eyeglass, the guards are manipulated by means of levers.

In the earlier period of the development of reading glasses, two factors were responsible for the limited use of glasses: the illiteracy of the lower classes rendered glasses superfluous to many, and their high cost (perhaps $200) made them inaccessible to others. As a consequence, glasses came to be a sign of social or intellectual position. Portrait painters of the renaissance period adorned their subjects with spectacles, sometimes even painting the early saints with anachronistic glasses. The increasing use of the spectacle during the seventeenth and eighteenth centuries, often an affectation, led to the satirizing of wearers of glasses. Hogarth and other artists used this affectation as a fit subject for caricature, nor did writers overlook this opportunity as these stanzas from William Cowper indicate:

"Between the Nose and Eyes a strange contest arose,
The spectacles set them unhappily wrong;
The point in dispute was, as all the world knows,
To which the said spectacles ought to belong."

After due argument on the point, a decision was reached,

"So his lordship decreed, with a grave solemn tone,
Decisive and clear, without one if or but—
That whenever the Nose put his spectacles on,
By day-light or candle-light—Eyes should be shut."

Even today, the theater, the cinema and the cartoonist use glasses consistently for characterizing certain types.

Physicians in the earlier days of spectacles discouraged the use of glasses, and the medical recognition of glasses was rather late. Bernard Gordon of Montpellier, the first physician to mention glasses (1305), considered them unnecessary, if his own eye remedies were used. The famous renaissance surgeon, Guy de Chauliac, recommended glasses only in the event that his eye lotion did not cure the visual defect. George Bartisch, a famous German ophthamologist, condemned their use in his textbook (1583), and von Arlt, during the past century, was the first important ophthalmologist to recognize the therapeutic importance of glasses. The recognition of astigmatism as a factor in eye strain had much to do with the increase of medical interest. The invention and perfection of the ophthalmoscope, the discovery of cycloplegic drugs and the publication of the fundamental studies of Donders in 1864 on the refraction and accommodation of the eyes preceded the universal acceptance of the importance of glasses. With the increasing medical application of glasses, systems of numbering lenses have appeared. According to the most important systems in use prior to the last decades of the nineteenth century, the effect of the lens was the reciprocal value of its radius of curvature. More recently, the focal distance of the lens in relation to a standard lens having a focus of one meter has been the most popular system. Thus, a two diopter lens, one twice as strong as the standard, has a focus of one-half meter.

Although glasses have been known for more than six centuries, the scientific status of ophthalmic lenses and the technical adaptation of glass and frame to the comfort and convenience of the wearer have been developments of the last hundred years. Medical interest in glasses has coincided only with the latter period.

Three faces wears the doctor: when first sought
An Angel's; and a god's, the cure half wrought.

But when, the cure complete, he seeks his fee
The devil looks less terrible than he.

—Anon.

"Throw twenty small objects such as beans on the floor, pick up one at a time and place on a shelf above the head using the hands alternately. Do it as quickly as possible." This is a recommendation for the treatment of Essential Dysmenorrhea in the newly revised work "Treatment in General Practice" by Beckman. Oh if women only wore collars the exercise might be varied by the morning hunt for collar buttons under the bed.

We are privileged to print the Beaumont Foundation lectures for the third time. These addresses on scientific subjects basic to medicine without exception have been given by men of erudition—leaders in their fields of thought and research. Dr. Fulton's second lecture will appear in the May number of the Journal. Given each year before a large audience of the Wayne County Medical Society, they are here available to every member of the Michigan State Medical Society.

The radio, one of the greatest triumphs of physical science, is sometimes prostituted to the most unscientific purposes, intruding as it does with its ballyhoo into the sanctity of the home. We hesitate to say what would happen to the person who would blow into the family circle and begin bellowing the claims of someone's panacea for all the ills that flesh is heir to. The messenger is one of the wonders of the age: the message is too frequently pure bunk, as much as we hate the word.

The popularity of medical service, so called, is attested by the fact that every one tries to get in on it. Even departmental stores find it a lucrative business inasmuch as one, at least, in this state has circularized the medical profession regarding the installation of a complete prescription service, though this store has not announced whether this service will be rendered nights, Sundays, or holidays. The department store is probably trying to get back at the druggist who specializes in soap, sandwiches, ice-cream, alarm clocks and what not.

One member of the Michigan State Medical Society has a proposition for increasing the advertising patronage of this Journal. Upon a visit from the detail representative of drug houses he turns to the advertising pages of the Journal and if the firm is represented the detail man is accorded a favorable reception; if not, he is politely requested to report the non-affective interview to his employer. If this attitude were generally adopted a larger and better Journal would be the result. A State Medical Journal is the property of the organized medical profession of the state, and its size in particular is determined by the amount of revenue from its main source, advertising.

TO BE SUCCESSFUL

Family Physician

Don't treat something you do not understand without expert advice.
Don't fail to be frank with your patients.
Don't fail to talk their language.
Don't fail to write out instructions.
Don't fail to consult the nurse on the case.
Don't talk shop to patients.
Don't tell patients how good you are.
Don't fail to have outside interests.
Don't have financial dealings with patients.
Don't keep moving from town to town. Select your location carefully and then stick.
Don't fail to show the spirit of service.

Practice:

Firmness, fairness, and frankness with the patient, but do not show temper.
Accompany the patient to the specialist's when possible. A personal introduction goes a long way and the specialist would benefit greatly by the added conference with you while on the case.
Be neat and clean in your personal appearance.
Give more time to the *convalescent* stage of the disease.
Show cheerfulness and encouragement in your work.
Be fair to your professional rivals.

Specialist

Don't work alone. Find out who the family physician is when possible.
Don't fail to have close contact with the family physician.
Don't omit the written reports to the physician.
Don't disregard the patient's story.
Don't protect the family physician when gross negligence is evident.
Don't necessarily form conclusive opinion on single visit evidence.
Don't object to a second opinion in obscure cases.
Don't overcharge.
Don't fail to show the spirit of service.
Be considerate of patient's and family's reactions to your opinions. Select your words with care.
During an extended examination observe carefully the patient's condition lest a too fatiguing conference be held.
Don't send patients home from office operation on the elevated when they request a taxi.

—*New England Journal of Medicine.*

DR. J. W. HANDY HONORED

It is somewhat infrequent that members of the medical profession are given the opportunity to honor one of their number who has spent half a century in the practice of medicine. Such honor, however, was accorded Dr. John W. Handy, of Flint, on Valentine day by the Genesee County Medical Society,

DR. J. W. HANDY

which tendered him a complimentary dinner. Dr. Handy's practice began and for many years he carried on when his means of locomotion, besides a pair of good sound legs, was the horse and buggy in spring, summer and fall, and horse and cutter in winter. Dr. Handy is proud to be known as one who loves horses and dogs. He places a high value on the companionship of both and, it goes without saying, he always showed the greatness kindness towards them, even providing euthanasia when old age had rendered these animal friends no longer useful. The doctor has long emphasized to his patients the importance of proper living. There is an old saying (we will find it somewhere in Shakespeare), "It were easier to tell twenty men what were best to be done than to be one of the twenty to follow mine own instruction." Dr. Handy has been one of those peculiar members of the medical profession who has followed his own instruction. Hence,

> * * * * * he is strong and lusty;
> For in his youth he never did apply
> Hot and rebellious liquors in his blood,
> Nor did he with unbashful forehead woo
> The means of weakness and debility;
> Therefore his age is as a lusty winter,
> Frosty but kindly.

He graduated from the University of Michigan School of Medicine in 1884 and, after a year's practice at Hartland, moved to Genesee County where he has practiced ever since. Dr. Ray Morrish, president of the Genesee County Medical Society, presided at the dinner. Besides Dr. Handy's address, toasts were responded to as follows: Fifty Years of Medical Progress by Dr. W. H. Winchester, Aches, Pains and Groans by Dr. Charles H. O'Neil. THE JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY joins in extending congratulations to Dr. Handy.

SOCIETY ACTIVITY

SPECIAL MEETING HOUSE OF DELEGATES

March 9,. 1934.

To Secretaries of County Societies and Delegates of the 1933 Annual Meeting.

Official Call for Special Meeting of the House of Delegates

Gentlemen:

Please be advised that there will be a Special Meeting of the House of Delegates of the Michigan State Medical Society in the Auditorium of the Hurley Hospital in Flint on *Thursday,* April 12, 1934, at 10:00 A. M. (Fast time).

The purpose of the Special Meeting is: "To receive and consider the Report and Studies of the Committee on Medical Economics and to give instructions to the Committee as to its further duties and activity."

Delegates elected and appointed to represent County Sooieties at the 1933 Annual Meeting in Grand Rapids shall constitute the delegates to this special session. In the event that the delegate representing a County Society at the 1933 Annual Meeting is no longer eligible to serve or is unable to attend, County Societies shall elect a delegate to serve in that capacity.

County Secretaries will provide delegates with a credential certifying that the delegate is duly authorized to represent a County Society. Delegates will present their credential to the Credential Committee in order to be seated.

By Direction of the Council
B. R. CORBUS, *Chairman*
G. L. LE FEVRE, *President*
H. A. LUCE, *Speaker*

Attest:
F. C. WARNSHUIS, *Secretary*
Grand Rapids, Michigan

Delegates are reminded to bring their credentials to be given to the Credential Committee in order to be seated at the special meeting. Your county secretary will give you a certificate stating you are an accredited delegate.

No other business, unrelated to the business stated in the call, can be introduced at the special meeting.

THE DOCTOR LOOKS AT PUBLIC HEALTH

People by and large are demanding more and more preventive medical service. Parents are learning that their children should be protected against smallpox and diphtheria and each year there are more people who appreciate the value of a periodic health examination. Without developing a health phobia the average citizen has discovered that it is profitable to keep the human mechanism in good working order; he has learned that it is easier to prevent than to cure tuberculosis; he has learned that with good prenatal and infant care twenty children out of every 100 born should not die during the first year of life.

This demand for preventive medicine must be filled. The research laboratories and the clinicians are providing the newer knowledge in sanitary science and now the public insists upon adequate service. This need can be provided by either building up a large full-time medical personnel operating under the direction of some public organization such as a health department or provision may be made by coöpting the services of the rank and file of physicians in private practice. The manner of preparing and regulating the qualification of such practicing physicians was discussed in the January issue of this Journal.

Now, what of the advantages of preventive medical service in the physicians' office rather than in public clinics! If there be such advantages, they would accrue to the public, the health agency of the community and to the physician.

The medical practitioner of tomorrow must be well versed in the art and practice of health education if he is to serve his clients to the maximum. It is well recognized that there is no rigid line of demarcation between preventive and curative medicine. To best serve his patient when ill the physician should have complete knowledge regarding the physical and mental stamina of his client when in normal health. We all recognize the value of moderation in our habits of life. Over-indulgence in palatable foods may well be an underlying factor in our increasing mortality from the degenerative diseases of late life. Hygienic supervision of the life habits of the layman by the family medical counselor is a goal worthy of attainment. There are some who exercise too little, there are others who overexercise. Some businessmen obtain too little sleep, others continue victims of a lethargic abnormality. It is the family physician in private practice working in his own office who, with reasonably complete information concerning the well-being of his client, should become the moderator in matters of personal hygiene. If the physician of the future serves as a health educator he will materially expand the influence of the local health agency with advantage to family and public alike.

The surest way to reduce the cost of illness is to prevent its onset. A satisfactory way to enhance the monetary return to the physician is to increase his services in the preventive field. When in good health the patient is more inclined and better able to pay for medical services. The truth of this statement is borne out by experience in Detroit, where during the past three years, due to the reduction in the diphtheria death rate, it is estimated that the physicians of the community have lost $60,000. This figure is based upon an assumed cost of $35 for each case of diphtheria treated. This loss would have accrued to the medical profession irrespective of whether free clinics were employed as a means of immunizing children of susceptible age or whether a program of medical participation had been adopted. Under the latter plan, however, the physicians have received, either through payment direct by the parent or through an honorarium provided by the Health Department, more than $300,000. In other words, medical service has paid this group of 1,100 coöperating physicians five times as much as they have lost in curative medicine. This demonstrates very distinctly that to the physician preventive medicine is more profitable than curative medicine.

At the same time the public has gained. The average cost of a case of diphtheria is $35; the average cost of prevention but $3. Again the advantage in favor of preventive medicine is more than ten to one.

Not infrequently do we hear that there are too many physicians practicing in this country; that the field is already oversaturated. We feel sure that this is not the case, but rather do we believe that the physician in private practice has either ignored or overlooked the possibility of tilling and cultivating that virgin and unplowed field of preventive medicine. With proper em-

phasis upon the elimination of preventible illness there will not be too many but rather too few physicians.

What taxpayer is not alarmed by the cost in operating government? Huge sums are appropriated by the federal, state and local governments for the care, confinement and rehabilitation of individuals sick in body and mind. Every new case of diphtheria or tuberculosis will prove to be an expense to both the family and the public exchequer. Health officers and physicians have quite properly urged the expansion of hospital facilities for the care of those suffering from tuberculosis. Sanatoria are needed not only for the benefit of the patient but as a means of protecting the public health, by removing foci of infection and especially by providing an isolation of the open case of tuberculosis which might otherwise infect the children of the household and become a menace to the entire community. But as these new and modern facilities for treatment have been made available the cost to government has increased. We do not argue against the creation of such hospitals; they are needed as a means to an end. We do feel, however, that there should be a more energetic effort to find disease in its incipiency, when the average period of hospital care will be greatly curtailed and where the chances of returning the individual to useful occupation will be much improved. How better can such a goal be reached than by integrating into the health program the physician in private practice, for it is to him that the great masses will turn in case of illness. The doctor must be aroused to his personal responsibility in public health work and he must be taught to recognize the early signs of tuberculosis. On the other hand, the public must be weaned away from the cults, the charlatans and the quacks of all descriptions. The professional relationship between family physician and the layman must be reactivated in the interest of preventive medicine. The practice of preventive medicine by the family physician will not only improve the income to the doctor but will reduce the cost to the individual and to government.

The Committee on Preventive Medicine of this Society has mapped out a program for the spring months with the hope that this work of professional participation will be carried to every part of the state. The Committee has already been represented at nearly a dozen county medical society meetings in Michigan. These conferences are made possible through the courtesy of the W. K. Kellogg Foundation of Battle Creek and its President, Dr. Stuart Pritchard. The Foundation has adopted this plan as one of its major activities, realizing full well that one of the important ways of promoting the health of childhood is by integrating into the program of health education the potential resources of the medical and dental professions. The value of such an educational program has been well demonstrated in Barry, Eaton and Allegan Counties, where all local physicians and dentists are participating in the public health program. Recently, in the absence of the three health officers of these counties, who had gone elsewhere for a period of two weeks, the local health machinery of these counties was directed temporarily by physicians in private practice. There has been a cementing of friendship between the health workers and the professional groups. There has been an active awakening of public and professional interest in health education which is producing noteworthy results in the reduction of morbidity and mortality rates; the prolongation of human life with marked economic saving to the local people.

COMMITTEE ON PREVENTIVE MEDICINE
MICHIGAN STATE MEDICAL SOCIETY

REDUCING THE COST OF DRUGS

EDGAR E. POOS, M.D., F.A.C.S.

During these days of depression we hear a great deal about the high cost of medical care. Millions are being spent to find out what it is all about; no remedy has been suggested. If the medical profession would make an honest analysis of some of their troubles I think they would find they are to blame for quite a few of them, one of these being the prescribing of high priced drugs by their trade name instead of U. S. P. or N. F. remedies.

The people of the United States spend approximately $715,000,000 annually for drugs and medicines; of this amount $190,000,000 was spent for prescriptions or products purchased under the direct advice of a physician. Five hundred and twenty-five million dollars represents the amount spent by the public for self medication, of which $360,000,000 was spent for what we col-

loquially call "patent medicine" of secret composition.

The average American family pays its doctor each year $24; for drugs and patent medicines, chiefly the latter, $25.00; for candy, $37.00; tobacco, $67.00; for passenger automobiles, $150; for soft drinks, ice cream and chewing gum, $34.00, and the average woman of the family spends $25.00 per year for cosmetics. So the doctor is still in the "piker" class.

The close relation of pharmacy to medicine is perhaps nowhere better illustrated than the title "Doctor of Medicine," because medicine, after all, is the mainstay of the care of the sick.

The properly trained pharmacist is a specialist in the compounding of medicine; the physician, a specialist in the treatment of disease.

The public is best served when each confines himself to the art in which he is trained.

The two professions should coöperate willingly and effectively for the best results and service to the public.

Due to high pressure salesmanship and mass production many of the pharmacies have deteriorated into bazaar counters, and the physician into a dispenser of samples and a salesman without remuneration for proprietary houses, which helps pay big dividends for the latter while the physician wonders how he will pay his rent, at the same time raising the price of drugs to his patient.

In December, 1820, the first pharmacopeia was printed, standardizing remedies, doses and therapeutic actions, since that time there have been 21 revisions.

There are about 1,400 different drugs listed, which should meet the requirements of every case.

The National Formulary was added in the year 1888 and later 1905, the New and Non-official Preparations by the American Medical Association, after they had passed their Council on Pharmacy and Chemistry.

In the late eighties German Chemical exploitation was under way. American pharmacy and American sick were exploited by, and paid heavy tribute to the German chemical manufacturers, enriching them at the expense of the unfortunate sick. As the patents ran out, American chemists manufactured these remedies and saved American sick untold thousands. A comparison of prices tells its own tale as follows:

PROTECTED NAMES

Atophan	$2.75 oz.
Aspirin	.85 oz.
Diuretin	1.80 oz.
Duotal	1.07 oz.
Luminal	6.20 oz.
Phenacetin	.63 oz.
Pyramidon	.82 oz.
Urotropin	.63 oz.
Veronal	3.00 oz.
Argyrol	1.50 oz.

NON-PROTECTED NAMES

Cinchophen	$0.40 oz.
Acetosalicylic acid	.15 oz.
Theobrom. Sod Salicyl	.30 oz.
Guaiacol Carbonate	.28 oz.
Phenobarbital	3.25 oz.
Acetphenetidine	.20 oz.
Amidopyrine	.44 oz.
Methenamine	.13 oz.
Barbital	.60 oz.
Argento-protein Mitis	.60 oz.

Adding to the cost of each of the above list you will find the non-protected names will cost one-third of those protected.

At the present time we are enduring an invasion by the Swiss under the Ciba label and also a French invasion of which you receive daily literature. When the physician and druggist cease to pay tribute to the proprietary manufacturers on the prescriptions, your patient will receive his prescription half price.

There are hundreds of trade marked articles which have been substituted for and are nothing more than official preparations with an advertised name.

PROTECTED NAMES

Mistol	2 oz.	$ .45
Peacock's Bromides	8 oz.	.75
Gardners Syrup H I	pt.	1.40
Tyree's Antiseptic P V	2 oz.	.30
Fellows Syr Hypophos	7 oz.	.72
Pepsincia (Fairchild)	1 pt.	1.50
Aristol	oz.	1.80
Adrenalin Chloride Sol	oz.	.85
Creosotol	oz.	.69
Chloretone	oz.	.85
Calglucon (Sandoz)	100 GN	1.10
Thiocol	oz.	1.50
Medinal	oz.	3.00
Resinol Oint.	3½ oz.	.80
Iodex	1 oz.	.38
Ovoferrin	11 oz.	.75
Listerine	14 oz.	.61
Glyco Thymoline	14 oz.	.84
Tongaline	4 oz.	1.50

NON-PROTECTED NAMES

Aromatic Spray N. F.	4 oz.	$ .50
Syr. Bromidorum N. F.	16 oz.	.86
Syr. H. I. N. F.	pt.	.50
Pulv. Antisep	pt.	.50
Syr. Hypophos N. F.	pt.	.75
Ess. Pepsin N. F.	pt.	.77
Thymol Iodide	oz.	.51
Sol. Epinephrine	oz.	.60
Beechwood Creosote	oz.	.21

Chlorbutonal	oz.	.59
Cal. Gluconate	oz.	.15
Potass. Guaicol Sulph	oz.	.26
Sod. Barbital	oz.	.65
Co. Oint Resinol N. F.	lb.	1.75
Stainless Iodine Oint.	lb.	1.35
Liq. Ferr. et Mang. Pept.	pt.	.60
Liq. Antisepticus N. F.	pt.	.25
Liq. Antisept. Arom. N. F.	pt.	.40
Elix Tonga and Salicyl N. F.	pt.	1.35

The interest of the firms introducing these protected named drugs is largely mercenary; they are seeking to supplant some tried remedy by advertising for profit.

The physician prescribing these proprietaries makes himself a selling agent without remuneration, at the same time introducing his patient to the folly of consulting a physician when he can get it over some cut rate counter without a prescription. Cut the huge cost of medical bills by prescribing the non-protected names, Chemical nomenclature U. S. P. or National Formulary preparations. Foster American art, science and industry.

SELF MEDICATION

These new remedies are usually brought out for their cash register value. Self medication crops up, because of the easily remembered name of the remedy. The patient remembers a catchy name as well as the doctor, reads the prescription and asks for 4 oz. Syr. Cocillana, 1 bot Ovoferrin, 1 oz. ephedrine Sol., etc., etc. Any proprietary which was introduced as an ethical preparation may find favor with the medical profession, the druggist is offered free goods in four ounce bottles, to be displayed on his show case, and soon the patient is sold the preparation directly by the pharmacist. You may have observed that street cars carry the advertisement of this proprietary "endorsed and prescribed by your physician," which tells the patient that your service is not needed—to save the physician's fee when troubled with constipation, acidity, cough, colds, corns or flat feet.

Do you remember the time when nearly 25,000 gullible physicians endorsed a certain cigarette being less harmful to the throat?

Next the department store bargain counter or "thrift store" cuts the price to attract trade, and your patient's reaction is that the druggist is a robber and you, too, for prescribing a proprietary and charging an office fee, where the clerk back of the department drug counter can prescribe the same remedy at a saving of from $3 to $5. If the remedy proves of benefit, the name is passed around all the family, relatives and neighborhood and you undoubtedly will wonder why patient does not return or blame the poor ethical druggist for counter prescribing. Let me recall the following names to you.

Listerine, glycothymoline, lavoris, Phillips milk of magnesia, bisodol, citro-carbonate, nujol, mistol, petrolagar, agarol, argyrol, mercurochrome, allonal, veronal, phenolax, unguentine, aspirin, luminal, pertussin with its free wooden tongue blades, syr. cocillana, irradol A., various mineral oils, viosterol, Hinkel's pills and cod liver oils, anusol suppositories, unguentine, Lilly insulin, Squibbs adex tablets, mineral oil, etc., Fellows hypophos, Gudes pepto-mangan, Vicks products., etc., were all introduced and sponsored by the medical profession and are now to be found on the bargain counter of the cut rate department or thrift store besides often being advertised direct to the public.

Do you remember a nasal spray window display last winter, where the ailing patient is calling up the doctor, and he replies, "I always prescribe "mistol for colds"?

It was cut-rate priced and showed how perfectly superfluous you and the druggist have become after you have introduced the mistol product for the Standard Oil Co.

You may now understand why some of your patients do not return; the druggist is discredited first, and, on second thought, the physician is superfluous. The average physician forgets all the materia medica and pharmacology he is taught in Medical School, but soon starts his post graduate training by circular information, or the manufacturer's agents discourse, rather than upon the U. S. P. and National Formulary.

The measure in which physicians will increase their knowledge of pharmacology and materia medica and dosage is the measure in which they formulate their own prescriptions. The more you do this the more helpful the pharmacist can be to you, especially the professionally minded pharmacist. There are still pharmacies today in which the physician can have full reliance and confidence. Pick your pharmacist.

Invite the ethical professional pharmacist to your medical meetings and talk over your problems together, as together you render a constantly growing health service in the interest of the sick.

I hope I have shown the medical profes-

sion how to cure one of their own ills, "Doctor cure thyself." If you don't, I do not know who will do it for you. Remember the "Ethical pharmaceutical of today often becomes the advertised "patent medicine" of tomorrow, and when you dispense that sample on your drug shelf with the name of the product all over the package you are introducing your patient to self medication and the folly of seeing you again.

554 Fisher Building.

REFERENCE

Emmerich, Herman L.: Wisconsin Med. Jour., April, 1933.
U. S. P.: 21st Edition, National Formulary.

WHY?

At regular intervals from varied sources comes the inquiry why "something isn't done" about this or that. We are confronted with problems and conditions that are not to a doctor's liking. Their solution is not born of the moment. Many of them will never be solved or adjusted until every doctor relinquishes the argumentative attitude for one of coöperative action and support.

If you render services at a discount or a split of the regular fee; if you serve in a clinic or dispensary where persons able to pay receive free service; if you are filling out insurance certificates for no fee; if you are failing to practice preventive medicine and stand by while parents take their children to health clinics; if you neglect to cultivate and enlighten your senator and representative—if—well if you fail to play an active part in your county society and your community you will find the answer why something isn't being done by looking in your mirror, for the answer is because of YOU. If all the "you's" would rally in support of your County Society satisfactory solutions would be attained. Will "you" get busy? Will "you" go to work? File your answer at your next county meeting.

The appeal is again made to patronize our advertisers. Give them preference for they make your journal possible.

Write for your hotel reservations for the A. M. A. meeting in Cleveland in June.

Send $1.25 to the State Secretary for a copy of the Survey Committee's report. It contains much of interest and information. Only a few copies remain available.

COURSES FOR GRADUATES

The Department of Post-Graduate Medicine of the University Medical School and the Michigan State Medical Society announce a series of Post-Graduate Courses:

Ophthalmology and Otolaryngology—University Hospital, Ann Arbor, April 23-28.

Medico-Military Refresher Course—University Hospital, Ann Arbor, April 15-28.

Diseases of Metabolism—University Hospital, Ann Arbor, May 21-26.

Clinic on Speech Defects—Northern Michigan Children's Clinic, Marquette, April 26.

Proctology—Receiving Hospital, Detroit, May 28 to June.

Obstetrics, Gynecology and Gynecological Pathology—Receiving Hospital, Detroit, June 4-9.

Practitioners' Course—Receiving Hospital, Detroit, June 18-23.

Surgical Diagnosis—Receiving Hospital, Detroit, June 25-30.

(All dates inclusive)

UNIVERSITY HOSPITAL OPHTHALMOLOGY AND OTOLARYNGOLOGY

April 23-28, 1934

Ophthalmology

Monday, April 23rd

MORNING

8:00- 9:00 Registration. Room 2040.

9:00-10:00 Angiomatosis Retinæ.
Dr. F. B. Fralick

10:00-12:00 Extra-ocular Muscle Balance.
Dr. J. W. White
New York City

12:00- 1:30 P.M. Luncheon. Round Table Discussion. Leader
Dr. J. W. White

AFTERNOON

2:00- 3:00 Extra-ocular Muscle Balance.
Dr. J. W. White

3:00- 4:00 X-ray and Radium Therapy in Ophthalmology.
Dr. Harold Jacox

4:00- 5:00 Clinical and Pathological Aspects of Malignancy of the Lacrymal Gland.
Dr. W. S. Davies

EVENING

*7:00- 8:00 Ophthalmic Pathology.
Dr. Ruth Wanstrom
Dr. F. B. Fralick

*Ophthalmic Pathology limited to the first ten applicants for the course.

Tuesday, April 24th

MORNING

9:00- 10:30 Clinical Pathological Conference.
DR. C. V. WELLER
DR. F. B. FRALICK AND STAFF

10:30-12:00 Ocular Therapeutics.
DR. W. R. PARKER
Detroit

12:00- 1:30 P.M. Luncheon. Round Table Discussion. Leader
DR. W. R. PARKER

AFTERNOON

2:00- 3:00 Ocular Therapeutics.
DR. W. R. PARKER

3:00- 4:00 Malignant Uveitis.
DR. H. A. DUNLAP

4:00- 5:00 Neurological Problems of Ophthalmological Interest.
DR. R. W. WAGGONER

*7:00- 8:00 Ophthalmic Pathology.
DR. RUTH WANSTROM
DR. F. B. FRALICK

Wednesday, April 25th

MORNING

9:00-10:30 Tattooing of the Leucomatous Cornea.
DR. H. A. DUNLAP

10:30-12:00 Problems and Procedures in Refraction.
DR. A. D. PRANGEN

12:00- 1:30 P. M. Luncheon. Round Table Discussion. Leader
DR. A. D. PRANGEN

AFTERNOON

2:00- 3:00 Problems and Procedures in Refraction.
DR. A. D. PRANGEN
Rochester, Minn.

3:00- 4:00 Changes in Refraction Following Operations for Strabismus.
DR. DON MARSHALL

EVENING

*7:00- 8:00 Ophthalmic Pathology.
DR. RUTH WANSTROM
DR. F. B. FRALICK

*Ophthalmic Pathology limited to the first ten applicants for the course.

Otolaryngology

Thursday, April 26th

MORNING

9:00-10:30 The Complications of Acute Suppurative Otitis Media.
DR. A. C. FURSTENBERG

10:30-12:00 Pediatric Otolaryngology.
DR. L. W. DEAN
St. Louis, Mo.

12:00- 1:30 P.M. Luncheon.

AFTERNOON

2:00- 3:00 Clinical Presentation.
DR. L. W. DEAN

3:00- 4:00 Immunity Manifestations of the Fixed Tissues.
DR. R. L. KAHN

7:00- Anatomical Studies. Anatomy Laboratory. New Medical Bldg.

Friday, April 27th

MORNING

9:00-10:30 The Fractured Nose.
DR. FERRIS N. SMITH
Grand Rapids, Mich.

10:30-12:00 The Clinical Application of Newer Research in Chronic Sinusitis.
DR. W. P. WHERRY
Omaha, Neb.

12:00- 1:30 P.M. Luncheon.

AFTERNOON

2:00- 3:00 Clinical Presentation.
DR. W. P. WHERRY

3:00- 4:00 Clinical Presentation of Cases. DR. JAMES MAXWELL

Saturday, April 28th

MORNING

9:00-10:30 A Clinical and Pathological Study of Lateral Sinus Thrombosis.
DR. JAMES MILTON ROBB
Detroit, Michigan

10:30-12:00 Tumors of the Pharynx and Larynx.
DR. GORDON B. NEW
Rochester, Minn.

12:00- 1:30 P.M. Luncheon.

AFTERNOON

2:00- 3:00 Diagnostic Problems in Otolaryngology.
DR. GORDON B. NEW

3:00- 4:00 Neuroses in Relation to Otolaryngology.
DR. RAYMOND WAGGONER

NORTHERN MICHIGAN CHILDREN'S CLINIC MARQUETTE

April 26, 1934

Morning

9:00 Examination and Demonstration of Cases.
Pediatrics. DR. M. COOPERSTOCK Marquette
Neurology. DR. R. W. WAGGONER Ann Arbor
Orthopedics. DR. E. R. ELZINGA Marquette
Speech Defects.
PROF. JOHN H. MUYSKENS Ann Arbor

12:00 Luncheon.

AFTERNOON

1:00 Neurological Conditions in Childhood. DR. R. W. WAGGONER
1:45 Pediatric Problems.
DR. M. COOPERSTOCK
2:15 Speech Defects and Their Management.
PROF. JOHN H. MUYSKENS
3:00 (a) Water Balance.
(b) Blood Vessel Disease and Treatment.
DR. WALTER MADDOCK
3:45 Orthopedic Program and Policy for the Upper Peninsula.
MR. H. H. HOWETT or
DR. E. R. ELZINGA

MINUTES OF THE SPECIAL MEETING OF THE EXECUTIVE COMMITTEE OF THE COUNCIL

The Executive Committee of the Council of the Michigan State Medical Society met in special session in Grand Rapids on February 22, 1934, at 6:00 P. M., for the purpose of considering a request received from the Committee on Economics and for the discussion of such other business as might be deemed advisable.

There were present: Chairman Corbus, Henry Cook, Henry Carstens, C. E. Boys, F. A. Baker and H. A. Luce, Councilor J. F. Powers, President Geo. L. LeFevre, Ex-President J. B. Jackson, W. H. Marshall, Nathan Sinai and the Secretary.

1. The secretary presented a communication from the Michigan Tuberculosis Association that was addressed to the Council in response to the action of the House of Delegates recommending that the Association employ an Executive Secretary who holds a degree of doctor of medicine. The secretary was directed to transmit this communication to the next meeting of the House of Delegates.

2. The secretary presented a communication from the State Commissioner of Health, Dr. C. C. Slemons, relative to the Child Nursing Project in Michigan. Upon motion, the communication was referred to the chairman of the Committee on Preventive Medicine.

3. The secretary presented a communication from the Council of the Wayne County Medical Society relative to Michigan's proposed institutional building program. After discussion, on motion of Cook and Carstens, the secretary was directed to present the communication to our Committee on Legislation with the recommendation that the Society approves a building program that will provide additional beds for psychiatric cases and that the Society does not approve the providing of additional institutional facilities except as the peculiar and actual needs of any community may deem such facilities desirable.

4. The secretary presented a communication from the secretary of the Calhoun County Medical Society suggesting that the University arrange to provide post graduate opportunities for members of the State Medical Society without fee. On motion of Luce-Cook this communication was referred to the Special Committee on Post Graduate Work of the Committee on Economics for their consideration and recommendation.

5. The secretary presented a communication from the Director of Welfare Relief of Oakland County relative to certain practices that were being carried out in that county. After discussion, on motion of Boys-Carstens, the communication was tabled.

6. Following the request of the Committee on Economics, Doctors Luce and Sinai presented a preliminary report of the findings and factual evidence that was obtained by them in their recent visit to England. This report was a matter of prolonged discussion by all those present. Following the discussion, the following motions were made by Baker and Cook.

(a) That the secretary be instructed to send this report in its entirety, as it was presented to the Executive Committee of the Council at its meeting in Grand Rapids on February 22, 1934, to the chairman of the Board of Trustees of the American Medical Association.

(b) Cook and Baker moved that the report of Doctors Luce and Sinai be received and that the Committee on Medical Economics be instructed to continue with its investigations and studies in compliance with the instructions of the House of Delegates.

REVISED BUDGET—COMMITTEE ON MEDICAL ECONOMICS

September 15, 1933—September 15, 1934

	Salary	Expense	Travel	Total	Expended to 1-31-34	2-1-34 to 9-15-34
Director of Studies	$3,000	.....	$ 200	$3,200	$ 180.67	$3,019.33
Secretarial and Clerical	950	.....	.....	950	353.35	596.65
Office—Telephone and Telegraph	.....	220	.....	220	91.70	128.30
	.....	285	.....	285	135.59	149.41
Printing and postage	.....	600	.....	600	438.55	161.45
Charts and Graphs	.....	50	.....	50	.....	50.00
Special Studies						
Health Insurance	500	50	2,000	2,550	2,027.97	522.03
Postgraduate Studies	.....	400	.....	400	.....	400.00
Miscellaneous	.....	250	.....	250	5.84	244.16
Totals	$4,450	$1,855	$2,200	$8,505	$3,233.67	$5,271.33

7. The Committee on Economics presented a budget to cover the expenses of its activities. This had been referred to the Chairman of the Finance Committee, Dr. Henry Carstens. After discussion, upon motion of Carstens-Baker, the Executive Committee approved the budget of $7,850.

SOURCES OF FUNDS

Tracy McGregor	$7,500.00
American College of Dentists	350.00
Total	$7,850.00

RECEIPTS AND EXPENDITURES JANUARY 31, 1934

Receipts:	
Tracy McGregor	$3,500.00
American College of Dentists	350.00
Total	$3,850.00
Expenditures to January 31, 1934—Total	3,233.67
Balance	$ 616.33

RECAPITULATION

Estimated Budget to September 15, 1934	$8,505.00
Total Receipts to September 15, 1934	7,850.00
Deficit	$ 655.00

8. Upon motion of Carstens-Boys $500 of the Society's funds were appropriated, in compliance with the action of the House of Delegates, for the purpose of defraying the expenses of members of the Committee on Economics when attending committee meetings.

9. Upon motion of Baker-Boys the question of the acceptance of the contribution of $350 from the American College of Dentistry was deferred until the regular meeting of the Executive Committee on March 7.

10. Upon motion of Carstens-Cook, the secretary was directed to pay the expenses and accounts of the Committee on Economics as special funds for the defrayment of these expenses were available.

11. The matter of appointment of members of the Medical Legal Committee as referred by the Council at its January meeting was postponed for consideration at the meeting on March 7.

12. The Executive Committee adjourned at 12:45 A. M.

F. C. WARNSHUIS, *Secretary.*

MINUTES OF THE EXECUTIVE COMMITTEE MEETING OF THE COUNCIL OF THE MICHIGAN STATE MEDICAL SOCIETY

The Executive Committee of the Council convened in session in Ann Arbor on Tuesday, March 6, 1934, at 7:30 P. M. Present: Corbus, Boys, Baker, Luce, Cook, Carstens. There were also present Councilor Cummings, Editor Dempster, Treasurer Hyland, Doctor Bruce and Doctor Sinai.

1. The Council having authorized the Executive Committee to appoint the Medical-Legal Committee the election of members was proceeded with. Upon motion of Luce-Baker, Angus McLean of Detroit was elected chairman. Upon motion of Cook-Luce, F. B. Miner of Flint was elected a member. Upon motion of Carstens-Boys, J. D. Bruce of Ann Arbor was elected a member. Upon motion of Cook-Boys, E. I. Carr of Lansing was elected a member. Upon motion of Luce-Baker, W. J. Stapleton of Detroit was elected secretary. Under a new arrangement the secretary of the committee will act as its administrative officer, assuming the duties formerly assumed by the chairman of the committee.

2. Upon motion of Cook-Baker, the secretary was directed to send a letter of acknowledgment to the officers of the American College of Dentistry for the $350.00 contributed to the work of the Committee on Economics.

3. The secretary presented a communication from the Committee on Economics requesting an early and special meeting of the House of Delegates to be called to receive and consider the Progress Report of the Committee on Economics. It was moved by Baker-Boys that a special meeting be called to be held in the auditorium of the Hurley Hospital in Flint. A motion was made by Carstens-Boys that the date be set as of April 12, 1934, at 10:00 A. M.

4. Motion was made by Baker-Boys that the Economics Committee arrange for Regional Conferences, with delegates, for the confidential discussion of the committee's report previously to the holding of the special meeting and that the secretary be instructed to arrange the time and place for the holding of these conferences.

5. Upon motion of Carstens-Luce, the secretary was directed to supply the director of the Committee on Economics with a petty salary account for which itemized statements are to be rendered to the secretary each month and that the other bills incurred in the course of the study and work of the committee be sent to the secretary for audit and voucher.

6. There being no other business the Executive Committee adjourned at 11:45 P. M.

F. C. WARNSHUIS, *Secretary.*

THE CONFERENCE OF COUNTY SECRETARIES

On Wednesday, March 7, 1934, at the University Hospital, Ann Arbor, fifty-two secretaries gathered for their annual conference. Many familiar faces appeared, also quite a few new ones. The plan of the morning clinical session for scientific refreshment made each one feel an interest in being present that otherwise might have been lacking.

The following clinical program was found to be most instructive.

Dr. C. D. Camp, neurologist, discussed epilepsy and hysteria most interestingly, giving the differential points in diagnosis and presenting a case illustrating a combination of symptoms of the two diseases in the same patient.

Dr. Kahn, bacteriologist, discussed some of the recent developments in immunology. He pointed out that the skin and other fixed tissues of the body play an important part in immunology. The response of different living tissues can be measured, and the skin responds most actively of all the tissues. The rôle of the tissues of the immunized animal is based upon the combining power of the tissues with certain antibodies. The skin helps to hold back the spread of the staphylococcus, characterized by the inflammatory response. Most immunity is located in the skin. If bacteria enter the blood stream the blood invasion helps develop immunization. Vaccines injected intravenously in small increasing doses seem to stimulate phagocytosis, while the skin injection only stimulates the skin locally. An interval of ten days between injections gives better response than the more frequent dosage.

Dr. C. C. Sturgis, internist, discussed the medical treatment of the anemias, and presented a case of pernicious anemia. He seemed most pleased with the results when concentrated liver extract is given intravenously, at thirty-day intervals, and urged that the red cell count be raised as high as possible if spinal cord changes are to be benefited.

Dr. Charles Brown, internist, discussed the therapeutic indications and limitations in the treatment of hypertension. He recommended rest, digitalis, theobromin-sodium-salicylate, euphyllin, and, in

dropsy, the mercurials, salyrgan and novasurol. Always give ammonium chloride three or four days before giving mercurials. For headaches in hypertension intrait de gue, extract of mistletoe, is an expensive proprietary remedy sometimes of value. The eye-ground examination is very important in determining evidence of cardio-vascular disease.

Dr. Carl Badgely presented a half dozen or more cases showing different methods of handling fractures as well as a case of leg lengthening where the femur had been elongated by means of open operation and the use of steel plate immobilization.

The afternoon session began promptly at 1:30. Dr. Henry Vaughn, Health Officer of Detroit, presented the so-called Detroit plan for disease prevention, and stressed the fact that only two deaths from diphtheria had occurred in Detroit during the four months of last year, whereas the average in former years was 120 deaths. He outlined also the coöperation plain in rural counties, notably Allegan, Eaton, and Barry counties, now being carried on under the direction of the Kellogg Foundation. He said that the essentials of any public health program were only met when the doctors themselves were properly prepared and thoroughly sold on preventive medicine. Doctors must be taught the newer methods and technic of disease prevention by postgraduate courses. The public must be educated to go to the doctor. Diphtheria can be eradicated, but the public must be educated to the value of immunization. This work can best be carried on by the County Unit System, but the full coöperation of the doctors is essential for its success.

Dr. J. B. Bradley of Eaton Rapids spoke briefly on the legislative problem, and urged each doctor to contact and make friends with each member of the legislature in his own community. It was the opinion that it would be beneath the dignity of the profession to furnish this Committee with money to use in any such manner as was reported that it had been used by certain of the cults last year.

Dr. Lewis LeFevre of Muskegon presented a comprehensive paper on the care of indigents in Muskegon County, which, to some present, seemed to indicate that there was a wide range of latitude in the interpretation of the rules and regulations governing the Federal Emergency Relief Administration. This paper provoked a lot of lively discussion and brought out many points which were bound to be helpful to every County Society represented.

Dr. J. D. Bruce, Dean of Medical Education, discussed the subject of post-graduate education. For many years the University has offered courses in P. G. education in medicine and its branches. Most of these courses were arranged to accommodate the instructors rather than to meet the needs of the doctors. The courses were too long and drawn out and contained too many irrelevant subjects. The trend of late has been to shorten the courses and to intensify the training to include only the immediate subject which the doctor wants. The expense has likewise been reduced to a quarter or an eighth of what it was formerly, and much time and expense saved. About 700 doctors a year take advantage of post-graduate courses at the University, but large as this number is, it should be materially increased, especially for the inclusion of those doctors in rural regions whose opportunities for medical study are limited, and owing to the stringency of the times are unable to afford post-graduate study.

Following these talks a round-table discussion afforded opportunity for each secretary to express opinions and to give experiences in connection with the various phases of social, political or public health policies with which he was familiar.

At a 6 o'clock dinner at the Michigan Union, a delightful social hour was spent. Short talks on medical problems and policies were given by Past-Presidents H. E. Randall and Carl F. Moll of Flint, J. Milton Robb of Detroit, and by President George LeFevre of Muskegon, as well as impromptu talks by several of the county secretaries. Dr. W. E. Ward, secretary for twenty-six years in Owosso and the longest acting secretary present, presented some of his experiences, and received congratulations for his long time efficient service.

The trend of thought expressed at this meeting was to the effect that there was little fear of State or social medicine providing physicians stick to their last, and fulfill their obligations to the public by the rendering of careful, efficient, scientific medical service to the sick, and to be ready to meet the changing needs of the world in this day of revolutionary thought and action.

SUMMARY

On the whole this Conference of Secretaries, representing the prime movers of organized medicine in Michigan, was well worth attending. These annual meetings do much to put the county secretaries on the spot, and are a school of instruction in the details of his office. The earlier in the year they are held the better they will serve to get the county societies going for the coming year.

If asked how these meetings could be improved upon from now on and speaking from the standpoint of a humble secretary I would recommend the following:

1. Many societies publish a monthly Bulletin. Invite the editors of these Bulletins, if not edited by the secretary, to come to these gatherings. Give these editors a separate hour for conference to discuss their problems, such as advertising rates, cost of printing, editorial matter and other details.
2. Give the secretaries an hour or two to discuss by themselves the problem of secretarial technic, collection of dues, methods of handling of reports, and other problems.
3. Have a general session and have the secretaries bring in any recommendations they may have to the council for improving medical societies and the carrying out of medical objectives in organized medicine.
4. Assign essays before the meeting to specially experienced secretaries on the subjects—How to add new members; how to get good programs across; medical ethics; public health education via radio, etc., etc., and have these papers read for the benefit of all the secretaries. More and more the thought of these intensive sessions will be reflected to the societies in a revival of interest in organized medicine and its power for good in every community will be increasingly felt. There must be no apathy today.

H. B. Knapp.

OUR ENGLISH MISSION

Many letters have been received seeking to ascertain the findings of Drs. Luce and Sinai during their stay in England.

This English inquiry is part of the activities of our Committee on Economics. This is a Committee of the House of Delegates. None of the committee's findings or recommendations can be disclosed until they have been received and acted upon by the House of Delegates. For this reason no information can be inparted until it is released by the House of Delegates.

Have you paid your 1934 dues? Those in arrears April 15 automatically become listed as suspended.

MICHIGAN STATE MEDICAL SOCIETY AND DEPARTMENT OF GRADUATE MEDICINE UNIVERSITY OF MICHIGAN

11th District Post Graduate Conference

Century Club

Muskegon, Michigan

Wednesday, March 21, 1934

1:30 P. M. Acute Infections of Throat and Neck.
Dewey R. Heetderks, M.D.
Grand Rapids, Michigan

2:15 P. M. Recent Factors in Treatment of Cardiac Lesions.
Charles L. Brown, M.D.
Ann Arbor, Michigan

3:00 P. M. Acute Lesions of Abdomen.
Eugene Potter, M.D.
Ann Arbor, Michigan

3:45 P. M. Recent Measures in Prevention and Treatment of Acute Infectious Diseases.
T. D. Gordon, M.D.
Grand Rapids, Michigan

4:30 P. M. Acute Infections of Urinary Tract.
W. J. Butler, M.D.
Grand Rapids, Michigan

6:00 P. M. Century Club—Dinner.

POST GRADUATE CONFERENCE

Perry Hotel—Petoskey

Thursday, March 8, 1934

Councilor B. H. Van Leuvan, presiding

2:00 P. M.

1. (a) "Acute Suppurations of the Mouth, Pharynx and Cervical Region"
   (b) "Tumors and Cysts of the Head and Neck"
   A. C. FURSTENBERG, M.D., Ann Arbor, Michigan
2. (a) "The Diagnosis, Symptoms and Treatment of Anemia"
   RAPHAEL ISAACS, M.D., Ann Arbor, Michigan
3. (a) "Obstetrical Emergencies"
   (b) "Post-Natal Care"
   NORMAN F. MILLER, M.D., Ann Arbor, Michigan

6:00 P. M.

4. Dinner—Perry Hotel

Evening Session

8:00 P. M.—Public Meeting—High School Auditorium

"Preventive Measures for Community Health"

Speakers to be announced.

See Your County Secretary and Keep in Good Standing by paying Your 1934 Dues.

COUNTY SOCIETIES

BAY COUNTY

The following meetings have been held by the society:

January 10—Speaker, Dr. Bruce Douglas, Detroit; subject, "Childhood Tuberculosis."

January 24—A business meeting was held at the Wenonah Hotel at 6:30 o'clock. The meeting was devoted to a discussion of professional and economic problems.

February 14—Dr. W. G. Gamble, Bay City, addressed the society on "Fads, Fancy and Facts of the Thyroid Gland."

February 28—A meeting was again devoted to a discussion of economic and professional problems.

March 14—At 6:30 o'clock at the Wenonah Hotel the meeting was addressed by Dr. Bruce Fralick of Ann Arbor; subject, "A Review of Treatment of Common Eye Conditions."

The society recently passed two important resolutions:

(1) "No member or members of the society shall enter into a contract practice with the City of Bay City. Any work done for city employes must be done at the rates prescribed in the fee bill of the society."

(2) "No member of the society may deliver a talk or thesis before any lay group without first consulting the board of censors."

Councilor P. R. Urmston, Chairman C. S. Tarter of the Preventive Medicine Committee, and Secretary L. F. Foster attended the County Secretaries Conference in Ann Arbor.

The medical society is again to be heard over WBCM every Monday and Thursday at 12:30 P. M.

The following new members were recently elected to society membership: Dr. F. P. Husted, Dr. E. C. Hughes, and Dr. J. N. Asline, all of Bay City.

The society members attended in a body the funeral of Dr. James M. McLean, Saturday, March 3, 1934.

Councilor P. R. Urmston was nominated for the office of County Supervisor from the third ward at the primaries, Monday, March 5. He is now the incumbent.

L. FERNALD FOSTER, M.D., *Secretary.*

BERRIEN COUNTY

Secretary's Annual Report, 1933

This year brings to a close one of the most hectic times that it has been the privilege of any of us to witness. Great world changes in social, economic and legislative affairs, amounting practically to complete revolution, have taken place and have been reflected on the same scale in our Society.

Starting the year with the lowest budget and the lowest dues, in the history of our Society, we have come through with flying colors, no loss of members, but an increase, viz., some have dropped out but have been replaced by others, and in addition we have paid all our bills, some back ones, and some that were unexpected when the budget was outlined, and we still have money in the treasury for the new year.

There have been criticisms aimed at the financial, social and legislative actions of our Society, as well as the usual ones always to be expected aimed at the officers. But criticism of actions, lack of actions and too much action, signify an interest in any organization, and that it is worth while, as without

such comment the Society is either too good to be true or else not worth existing.

In an organization such as ours, there is a great tendency to allow all the work to drop on the shoulders of one or two, because of meeting once a month, covering a wide geographical area and the variation in city, country and village practice, so that these few on whom the responsibility hinges are also the ones on whom the criticism is heaped. I know of no way by which this can be avoided. We have tried repeatedly to shift program responsibility without success. This year the Public Relations Committee have more than done their part. They have displayed an interest, and work, and time, that shows the value of organized medicine, and their work has been well done. Our well attended business meetings have shown that there are many sides to all questions, and final consideration has been for the group as a whole.

Social problems such as the Adult Afflicted, Child Afflicted, Public Health and Welfare, have undergone such complete revolutions not only in our county, but all over the United States, that it has been impossible for any one or two individuals or groups to say which policy is the right one. The same has been true of legislative events, coming so fast and with such revolutionary suddenness that, almost before one could think, legislation has been enacted, the like of which the world has never known before, and such legislation has not been confined but all-inclusive, even of medical acts, and, as a natural sequence of this, individuals want to know why and how such drastic and experimental changes, and the reply is, "Damned if I know, but it did happen," and personally I have seen enough to know that the efforts of individuals, or groups, have been puny in their attempt to stem the tide. I suppose that it is all part of the New Deal, and a continuation of placing the blame on the "Ins."

However, we have this thing about medicine to offer, and it is part of our Code which has stood the test of time, and it is, "When new therapeusis is offered, if it stands the test of repeated and mass use, then turn to it," but in the meantime hold fast to the methods that have stood the test of time. If a new disease appears, treat it systematically until it can be diagnosed, in other words, let us not be hasty in applying a cure until we know what the disease we are fighting. We can see no difference in the approach to social problems of medicine, as they concern us, than we do in the approach to scientific problems.

The practice of medicine is not like retailing a commercial or fixed commodity of set standard, but it is the marketing of an immaterial wealth of service, which in one instance is valueless, and in another invaluable.

In legislative actions we have had the invasion of cults, the lack of protection of the public from quackery, the jeopardy of physicians' rights from legislative bills aimed at the profession, such as health insurance laws, compensation laws, drug laws, income tax laws and a thousand and one other items. But the history of our profession has always shown these and we have before survived the invasion of cults and adverse legislation. Should our present policy be, "I am not my brother's keeper," "Let the public look out for itself," "Raise huge sums for medical lobbies," "Fighting fire with fire," or should we follow a conservative course of study, applying what therapeutic means we have and know, interspersed with a prayer and a hope that all of us united will find a diagnosis and cure. Let us not be stampeded into action and let us guard against a "Furor operandi."

It is easy to say afterwards, "He should have done this, or he should have done that for us as our representative," and the only comeback your representative has in this Society, the State and the National is, "I met the issue with the best I had, I played the game square, not only for you but for myself." Our profession has an all too common example of this in the individual who takes the credit when the patient is about well, and accuses the other fellow of malpractice if the patient dies.

Let us take the economical functions of organized medicine, and I am using the expression organized medicine not only to include our little society, but also our affiliations. This subject, of course, has more ramifications than any other, such as physicians' fees and expenses, and public relations in regard to fees for the indigent, child afflicted, and public health. Never before in the history of the world have there been such changes as have appeared in the economic status of medicine as have occurred in the past three years. To cut fees or not to cut, to continue charity to the indigent or to establish charges, to ask for state medicine, public health insurance, or what. I defy any group to be unanimous in the treatment of such problems. All these, and more too, confront us in the future, and they cannot be intelligently discussed or settled without study and diagnosis. Your state and national societies are doing a vast amount of research on these problems, and the tendency at your state meeting in Grand Rapids was to have a number of solutions and to avoid hasty actions which will later be regretted. Perhaps most of these problems are "Bugaboos," and perhaps delayed action means the death of the patient, but we would personally rather be condemned as being too conservative rather than being classified as hasty, rattlebrained, and a tyro. It's a little easier on one's conscience to know that the patient died a natural death rather than from too much interference, and it is a lot easier to save the next case, and incidentally the bulk of the public, while they "kid" us in regard to our conservative ethics, will stick to the conservative physicians, and I maintain that in every community the leaders through a period of time are men of this classification.

Financially organized medicine has the lowest cost of any group or guild in the world. Those of you who know about trade associations or luncheon clubs will know that this is true. Aside from your meal, your medical society costs about $1.04 per month. Of this 37½c per month is local expense paid out in bulletins, postage, stationery, guest expense, and miscellaneous secretary expense such as correspondence, etc., which is summarized and itemized for you in the treasurer's report. In other words leave out everything else connected with organized medicine but the speaker at a monthly meeting, and you pay less to hear him than you do a good amusement such as a movie. Of course speakers are like movies, occasionally we feel that the time would have been spent more profitably at home reading, but again one must consider that in the past five years we have had before this Society nearly every prominent physician and specialist in the State of Michigan, and to avoid duplication and imposition it is not surprising that occasionally we have a talk that is not worth while.

The remaining 67.5 cents of your monthly dues goes to your State Society. For this you receive the Journal once a month, the expense of which amounts to 50 cents per number. In other words, 50 cents a month for scientific reading and a trade journal which tells you of the latest advances in science and the social, economic and legislative problems of the physicians of the State of Michigan. The remaining 17.5 cents a month of your state dues pays for medico-legal advice and aid, legislative problems and propaganda, post-graduate lectures, economic studies, annual meetings, administrative

expense and all the hundred and one things in the state program. Many of these items probably do not affect you as an individual, but it is part of your contribution to the guild, and what is good for the majority is good for the individual. The question of medico-legal aid and advice has often been criticised as unnecessary expense, but if one considers the effect on your insurance premium alone it is worth while. Cities that do not have any fire protection pay high insurance premiums. No one but the crook wants to collect indemnity on fire insurance, as all honest men would much prefer to have the fire department get there in time to stop a conflagration. Adequate protection is wanted by the majority and for this you pay about 7 cents per month to the state. Also there has been criticism aimed at the total of such expense, stating that it smacks of racketeering. If there are any of us who upon careful study of the problem and statistical analysis can show how this can be cut down and still provide as much as we are getting let them come forward with new plans before the old ones are discarded, and I am sure that the Council of the State Society will bless you and give thanks.

So in this summary of our year's work, I beg of you, do not divorce your medical economics, legislation and finances from a profession or guild that has stood the test of time and previous depressions. Do not confuse with other commercial and retail lines. Take from these what is good and what can safely be applied to medicine, because of changing times, but do so in the manner in which we have been taught and the ways with which we are familiar in the practice of medicine. Give changes the therapeutic test before applications, and above all beware of the therapeutic-enthusiast, whose empiricism is based on one or two cases. If we do this the profession will survive with flying colors, knowledge and fellowship will increase; with these, as in the past, individual remuneration and pleasure.

Your secretary takes this opportunity to thank the membership for the confidence and coöperation of the society as a whole during the past year and to assure you that it has been a great pleasure to be of service to you. Perhaps at times the committees, such as the Public Relations, have felt that I have been a pest, but because of my close relation and association with the individuals of the society, I have tried to bring up all the points that the individuals might consider, at all times, even if personally I felt different about it, believing that action should be based on a thorough analysis of all objections. I wish to repeat that any organization that runs too smooth is either not worth keeping or is too good to be true.

W. C. ELLET, *Secretary.*

EATON COUNTY

A special meeting of the Eaton County Medical Society was called January 3, 1934, at the Hayes-Green Memorial Hospital to discuss with the local administration the part of the physician in the Direct Relief of the F.E.R.A.

An auditing committee consisting of Dr. C. D. Huber, Dr. A. G. Stanka, and Dr. Phil Quick was appointed by the president to meet with the local administration once monthly to audit all medical bills under the relief for the past month.

The committee is working harmoniously with the local administrator, Mr. H. Marr Byington, who is a friend of the profession.

Ladies' night was held at the Carnes-Tavern Hotel, Charlotte, January 26, 1934. Following dinner, the president, Dr. Clyde McLaughlin, called to order a short business meeting. At this meeting it was moved, seconded and unanimously carried that the Michigan Tuberculosis Association through the services of local physicians give tuberculin tests to all of the students of the upper five grades of the public schools of the county.

The speaker of the evening, Royal G. Hall, chairman of the Social Science Division of Albion College, was introduced by the president. Dr. Hall is a student on international affairs and spent the year 1932 visiting sixteen countries of Europe. His subject was "Germany Under Hitler." Following a very interesting presentation, a discussion was held in which Dr. Hall answered many questions.

JOHN LAWTHER, M.D., *Secretary-Treasurer.*

GRATIOT-ISABELLA-CLARE COUNTY

The regular monthly Tri-County Medical Meeting was held at the Wright Hotel, Alma, on February 16, 1934, with the president, Dr. A. D. Hobbs, presiding. The usual dinner was served before the program. Nineteen members were present.

Dr. Henry F. Vaughan, Commissioner of Health, Detroit, and member of board, W. K. Kellogg Foundation, then gave a very interesting discussion of the work he has developed in Detroit in Preventive Medicine and explained the benefits to the public and to the doctor through "Professional Participation in Public Health Work." Slides were shown to illustrate and outline more forcefully his talk. He then turned the discussion over to Dr. Byington, Associate Medical Director, W. K. Kellogg Foundation, who by the aid of slides discussed "Medical Participation in Rural Communities."

The subject was then open for discussion by Dr. Hobbs, who called upon Drs. DuBois, Carney, and Barstow.

Dr. Hobbs, in well chosen words, thanked Drs. Vaughan and Byington for bringing this aspect of the subject to the Society.

The regular business meeting then followed. Minutes of last regular meeting were read and approved.

Report of Committee on Membership.—Dr. Carney, chairman, moved that application for membership by Dr. L. L. Davis, Mt. Pleasant, be laid on the table. Seconded and carried.

Report Committee on Economics.—Dr. Carney, chairman, reported the Emergency Welfare fee adjustment. All minor surgical or special treatment to be allowed extra charge, but all bills are subject to question by the Welfare Committee and doctors' records must be available for scrutiny and adjustment by the Welfare Board and Society Committee on Economics.

It was moved and seconded that report of Tri-County Medical meetings be reported and have published by the secretary in the Mt. Pleasant, St. Louis, and Ithaca papers. Carried.

R. A. WILCOX, M.D., *Secretary pro tem.*

HILLSDALE COUNTY

A special meeting of the Hillsdale County Medical Society was held at the Keefer House, Hillsdale, Michigan, at 7:00 p. m., February 12, 1934, following a dinner.

Dr. H. F. Mattson, president of the Society, called the meeting to order.

Dr. Mattson introduced Miss West of the Michigan Department of Public Health, who spoke on the Relationship between the Public Health Service and the County Medical Society. She outlined a sixty-day plan for the immunization of school children up to the age of twelve years.

Moved by Dr. Day and seconded by Dr. Green that the doctors of the Hillsdale County Medical

Society coöperate with the Michigan Department of Public Health by immunizing without charge all children certified as coming from families of the indigent; and that the doctors schedule their usual fees for those able to pay fully or in part for this service. Carried.

Mr. Pinto of the W. K. Kellogg Foundation spoke on the subject of the work of the Kellogg Foundation and its relationship in health work to the County Medical Society.

It was moved by Dr. Green and seconded by Dr. Bower that a committee be appointed to secure necessary petitions, petitioning the Kellogg Foundation to establish a County Health Unit in Hillsdale County. Carried.

Moved by Dr. Green and seconded by Dr. Day that the Society go on record as thanking Miss West for her help in her splendid address. Carried.

Miss Ruth Knapp, City Nurse, spoke of the health work in the City of Hillsdale and was thanked by the Chair.

Moved by Dr. Martindale, seconded by Dr. Poppen, that the meeting be adjourned.

D. W. Fenton, *Secretary.*

KALAMAZOO

The regular monthly meeting of the Kalamazoo Academy of Medicine was held in the Academy rooms February 20, 1934, following the dinner; President Huyser in the chair.

The minutes of the previous meeting were read and approved.

Communications were read.

Dr. Collins reported for the Medical Relations Committee. It was moved by Dr. Hubbell, seconded by Dr. Stewart, that the report be accepted and a more detailed report of the plans submitted at a subsequent meeting. Discussed by Drs. Hubbell, Vaughan and Collins. Motion carried.

Dr. Collins reported for the Committee appointed to confer with the Board of Supervisors of Kalamazoo County relative to the payment for rabies vaccine given by various physicians. The committee recommended: (1) That new statements be mailed to the County Clerk accompanied by an affidavit setting forth the circumstances under which the antitoxin was given and affirming that the administration of the antitoxin was approved by the Health Commissioner of the jirusdiction in which the patient resided. If such approval was not obtained it is suggested that the Health Commissioner be requested to approve the bill. Dr. Lavan has kindly consented to receive such bills for the city of Kalamazoo, attach his approval, and forward the bills to the County Clerk. (2) That the Secretary of the Academy be requested to write the County Clerk asking that the accounts be reconsidered by the Board of Supervisors and that each account be given individual attention. It was moved by Dr. Den Bleyker and seconded by Dr. Gerstner that the report be accepted. Discussed by Dr. F. T. Andrews. Motion carried.

The second reading of applications for membership of Dr. R. A. MacNeill of Allegan and Dr. A. B. Hodgman of Kalamazoo resulted in their unanimous acceptance.

The application of Dr. C. C. Fenstermacher, Three Rivers, for associate membership was unanimously accepted.

President Huyser announced the appointment of the following committees: (1) Dr. Collins and Dr. Westcott to be added to the Kalamazoo County Medical Advisory Committee; (2) Drs. A. S. Youngs, P. G. Schrier, and D. J. Scholton to draw up a set of resolutions pertaining to the death of Dr. Bosman and send a copy of such to his family; (3) Drs. H. H. Stryker, W. O. Jennings, and R. W. Shook to draw up a set of resolutions pertaining to the death of Dr. Rogers and send a copy to his family.

LIVINGSTON COUNTY

Following a Sanatorium dinner at 7:00 P. M., Dr. Clyde K. Hasley, President of the Detroit Radiological Society, was introduced and gave us a very illuminating discourse on "seborrheic dermatitis and the treatment of superficial malignancies."

Doctor Hasley's talk was illustrated with an excellent series of stereoscopic slides. In discussing treatment he stressed the importance of radiological methods, particularly in the early dermo malignancies.

A short, informal business meeting followed the medical phase of the evening. There were present twelve members and five guests, including representatives of the Livingston County Dental Association.

R. S. Anderson, *Secretary.*

MECOSTA COUNTY

I have the honor to submit herewith the minutes of the last regular meeting of the Mecosta-Osceola Medical Society held at the Western Hotel, Big Rapids, Tuesday evening, February 13, 1934, the guests of Drs. MacIntyre and Peck.

Present: Drs. MacIntyre, Peck, Soper, Treynor, Campbell, Grieve, Franklin, Yeo, Bruggema, Kelsey, Burkart, Chess, East and Kilmer; Dentists Pryor, Zetterstedt, Shepherd, Miller and Rogers; Guests, Dr. Miller of Ft. Sheridan, C. C. Camp, Peacock; Dr. Epstein, Ft. Sheridan, C. C. Camp, Baldwin; Dr. A. R. Woodburne of the Grand Rapids Clinic; Mr. C. E. Moore, of Grand Rapids; and Dr. Hayes of Reed City.

Minutes of the last meeting were read and approved. Communications from the secretary of the State Medical Society were read and placed on file. Communication from Miss Addy, School Nurse, and Miss Bergy, County Nurse, relative to making TB tests of all school children under auspices of State TB Association; work other than x-ray to be done by the physicians of the county free of charge. Dr. Treynor explained the proposed plan and suggested that examination of the High School students might be advisable. Discussion brought out the general opinion that some reasonable arguments in favor of doing it should be presented by the sponsors of the plan. Dr. Treynor was requested to get some definite proposal in writing from the nurses named above and submit it to the society at the next meeting.

Application of Dr. Hayes, dentist of Reed City, was presented and on motion of Dr. Miller supported by Dr. Rogers, vote was taken and Dr. Hayes was elected to membership.

Dr. Treynor explained method of dealing with CWA employes who are not able financially to pay for services. Authorization for medical attention must be renewed every week. Emergency injuries acquired in line of duty are cared for by Federal Government, and come under compensation regulations.

Meeting then turned over to Dr. Chess, Chairman of Program Committee, who introduced Dr. A. R. Woodburne of the Grand Rapids Clinic, who gave a very interesting lantern slide presentation on cutaneous manifestations of syphilis. Discussion was freely indulged in and many questions asked. Chairman then introduced Mr. C. E. Moore of Grand Rapids

who showed views of the Canadian Northwest—Hunting Big Game in the Northwest woods.

Motion made to give guests and hosts a rising vote of thanks. Meeting adjourned.

Following are the minutes of a regular meeting of the Mecosta-Osceola Medical Society held in the western Hotel, Big Rapids, Tuesday, March 13, at 6:30 p. m., as the guests of Drs. Treynor and Bruggema.

Present: Drs. Chess, Peck, Treynor, Grieve, MacIntyre, Kilmer, Campbell, Bunce, Bruggema, Yeo and Burkart; dentists—Drs. Pryor, Rogers, Zetterstedt, Hayes and Miller; guest, Mr. Edward Brink of Grand Rapids, Michigan.

Minutes of last meeting were read and approved as read. Communication from secretary of State Medical Society relative to special meeting of the House of Delegates to be held at the Hurley Hospital, Flint, Michigan, on April 12, was read. Dr. Gordon H. Yeo was instructed to represent the society at this meeting.

The meeting was then turned over to the chairman of the Program Committee, Dr. L. F. Chess, who introduced Mr. Edward Brink. Mr. Brink gave a very instructive talk on the subject "Legal Responsibilities in Medical Practice." Following the speaker, discussion of the subject was freely indulged in by all. Upon motion of Dr. Yeo and Dr. Kilmer, a rising vote of thanks was tendered the speaker and hosts.

There being no further business, the meeting was adjourned.

JNO. L. BURKART, *Secretary.*

NORTHERN MICHIGAN

The regular meeting of the Northern Michigan Medical Society was held at the Perry Hotel, Petosky, February 8, 1934. The meeting was called to order by President McMillan. The secretary's report was read and approved. Correspondence was read. Drs. Conway, Armstrong, and Monfort were appointed as a Legislative Committee. Dr. Burns was appointed to the Program Committee for March and plans were formulated for a post graduate conference for our next meeting. Details were left to the committee to be worked out.

The business meeting was then closed and the program turned over to the Program Committee. Dr. Mast introduced the speaker of the evening, Dr. Arthur Woodburne, Grand Rapids. Dr. Woodburne gave a very practical illustrated talk, on the diagnosis of the various skin manifestations of lues. He clearly brought out the main diagnostic points connected with these manifestations. He also touched briefly on the treatment of syphilis. The talk was well received and was of practical value to the general practitioner.

E. J. BRENNER, *Secretary,*

The regular meeting of the Northern Michigan Medical Society was held in the form of a post-graduate conference at the Perry Hotel, Petoskey, March 8, 1934. One of the largest turnouts in years responded and the most successful of meetings was held. Visiting doctors from Alpena, Atlanta, Cadillac, Kalkaska, Beulah, Traverse City, Lake City, Gaylord, Grayling and other Northern Michigan cities attended.

The meeting was presided over by Councilor Van Leuven. The guest speakers were Dr. A. C. Furstenberg, Ann Arbor, who spoke on "Acute Suppurations of the Mouth, Pharynx, and Cervical Regions; Dr. Raphael Isaacs, Ann Arbor, who spoke on "The Diagnosis, Symptoms and Treatment of Anemia" and Dr. Norman Kretchmar, Ann Arbor, who spoke on "Obstetrical Emergencies." Each of these talks was very well given and enjoyed to the fullest extent by all those present.

Following the talks a dinner was served by the hotel.

SAINT CLAIR COUNTY

A regular meeting of the Saint Clair County Medical Society was held at the Hotel Harrington, Port Huron, Michigan, Tuesday, February 20, 1934. The meeting was very largely attended, there being twenty-five present at supper and thirty-five during the reading of the paper presented by Dr. W. D. Barrett of Detroit. The minutes of the preceding meeting were read and approved without correction.

The president, Dr. A. B. Armsbury, called the attention of the members and guests to the complimentary dinner being tendered Dr. Charles Godwin Jennings at Detroit on February 28, 1934, and urged that as many arrange to attend as possible. The president then called upon Dr. T. E. DeGurse of Marine City to introduce the guest of the evening: Dr. Wyman D. Barrett of Detroit. The former did so, paying several compliments in regard to the professional attainments of his friend Doctor Barrett.

The subject presented by Doctor Barrett was "Ruptured Appendix." The speaker stressed the fact that mortality in this class of condition had been on the increase and that this increase was due, in his opinion, not to neglect on the part of our profession as much as to the fact that owing to the economic situation the public generally were neglectful of themselves. He stated that many cases were being admitted to Detroit hospitals in which not only was the appendix ruptured but often ruptured for days prior to treatment. The speaker brought up the question of delayed treatment after rupture and stated that the trend was now to return to the view held more popularly years ago: namely to wait for a period after rupture unless intervention could be done within the first twenty-four hours. He separated the differential diagnosis of the child and the adult case and covered the same in a very complete manner. The speaker then read five case records to bring out the point that the waiting treatment in certain cases was followed by satisfactory end-result. During the interval after rupture and before drainage of abscesses he outlined the use of the rectal and Lavigne tubes to lessen distension, rectal feeding, parenteral fluids both saline and glucose and mentioned enterostomy as a measure to save life and cautioned that it was not to be delayed. He paid a compliment to our friend Dr. Angus McLean when he stated that many years ago the latter had done what he considered the very first enterostomies in the United States. Discussion was opened in a very fine manner by Dr. A. J. McKenzie and carried on by Dr. J. C. Webster of Marlette, J. A. Attridge and D. W. Patterson of Port Huron and C. A. MacPherson of Saint Clair. Doctor Barrett then closed the subject in the usual manner, replying to several questions raised anent the subject. The president thanked our guest for his fine talk and the Society gave him a rising vote of thanks. Dr. P. V. Wagley of Pontiac was announced as our next speaker at the meeting of March 6.

Meeting adjourned at 9:35 p. m.

A regular meeting of Saint Clair County Medical Society was held at the Harrington Hotel, Port Huron, Michigan, Tuesday March 6, 1934, Supper was served to twenty at 6:30 p. m. The meeting was called to order by President Armsbury at 7:15 p. m. Dr. Howard O. Brush acted as secretary pro tem. until the Secretary arrived and took over his duties. The attendance at the meeting was four guests and twenty-two members. Dr. C. H. Ainsworth of Saint Clair was reinstated as a member in good standing by a resolution acted upon in the affirmative upon the receipt of his dues for current year. Discussion with regard to fees allowed by the Kroger Grocer & Baking Company followed. It was moved and supported that the members of the Society do not make any physical examinations for this firm for less than $2.00 and that the secretary be directed to write the company informing them of this action. Carried. It was moved, supported and carried that the secretary write the superintendents of Port Huron and St. Clair Community Hospitals submitting a list of members in good standing in the county, State and American Medical Associations.

Dr. P. V. Wagley, Assistant Medical Superintendent of Pontiac State Hospital, gave a very interesting talk on, "The relation of the physician to the psychiatrist." Several points were stressed by the speaker: that many so-called functional conditions of the body frequently placed under treatment by the physician are in reality psychoneuroses, that such cases are not well treated by the use of medicines, that the physician should endeavor to gain the confidence of the patient and then use psychotherapy, that once a fixation takes place the patient then becomes an institutional patient, that the means at the disposal of the institutional psychiatrist are essentially different from those in the hand of the physician, that a greater degree of control is possible in a hospital and that at times good results are obtained by seemingly harsh and stern treatment. Doctor Wagley also commented upon the widespread use of phenobarbital and stated that it was a habit forming drug and that many cases were admitted to the State Hospital who were addicts. In reply to a question the speaker stressed the fact that in probate examinations the physician should not attempt to make an exact diagnosis of a neuro-psychiatric condition but should confine his statement to a recital of facts and symptoms and allow the Probate Judge to draw his own conclusion. Discussion of the subject was carried on by Drs. Heavenrich, N. J. McColl and R. M. Burke of Emmett. Before adjournment the president thanked the speaker for his interesting talk and the Society gave him a rising vote of thanks. The application of Dr. Henry C. Wass of Saint Clair for membership in the Society was received and referred to the Board of Censors for action. Meeting adjourned at 9:15 p. m.

George M. Kesl, *Secretary-Treasurer.*

TUSCOLA COUNTY

The regular meeting of the Tuscola County Medical Society was held at the Montague Hotel, Caro, on March 8, 1934.

The meeting was conducted by Dr. O. G. Johnson, President, and papers were given by Drs. Ed Dowdle, and Wm. P. Woodworth.

Dr. Dowdle talked on "Acute Abdominal Conditions," and Dr. Woodworth on "Ophthalmology."

Dinner was served after the meeting.

L. L. Savage, M.D., *Secretary.*

WOMAN'S AUXILIARY, MICHIGAN STATE MEDICAL SOCIETY

MRS. ELMER L. WHITNEY, President
18224 Wildemere Ave., Detroit
MRS. C. L. STRAITH, Secretary-Treasurer
19305 Berkley Road, Detroit

BAY COUNTY: On February 7, Dr. and Mrs. L. Fernald Foster entertained members of the Bay County Medical Society and Auxiliary at their home, 1803 McKinley Ave., Bay City, between 6 and 8 p. m., at a supper party. Assisting the hostess were Mrs. V. H. Dumond, Mrs. D. J. Mosier, Mrs. E. C. Miller, Mrs. C. L. Hess, Mrs. G. M. Brown and Miss Marion Moore.

Mrs. E. C. Miller, *Publicity Chairman.*

OAKLAND COUNTY: At the luncheon meeting of the Oakland County Medical Auxiliary, on February 16, at St. Joseph Mercy Hospital, Dr. Howard Barber spoke on "The Trend of Medical Economics." Twenty members were present.

During the business meeting, which followed, Mrs. Hubert M. Heitsch, who was elected by the executive committee to fill the unexpired term of Mrs. J. Eugene Church, as president, was in charge.

Mrs. R. H. Baker, *Publicity Chairman.*

TUSCOLA COUNTY: Mrs. Theo. Hauffman, of Vassar, was hostess to the wives of the Tuscola County Medical Society members at a delightful tea, at her home, on February 8, which preceded the dinner given by the Tuscola County Medical Society at the Vassar Hotel to which they were invited.

WAYNE COUNTY: The public relations meeting of the Woman's Auxiliary to the Wayne County Medical Society held on February 13, with Dr. David R. Clark as speaker, drew a large audience to the J. L. Hudson Co. auditorium, where it was held.

Mrs. Frances Harris Dohn, soprano soloist and radio artist with station WWJ, rendered a group of French songs. She was accompanied on the piano by Miss Jean Apel. Mrs. Claire Kyler Hagey, in colonial costume, presented two readings.

Dr. Clark, Professor of Psychiatry at the Detroit College of Medicine and Surgery, senior attending psychiatrist to Receiving Hospital and St. Joseph's Retreat, and consultant to many other Detroit hospitals, spoke on "The Content of a Psychopathic Ward"; a very timely subject because of the great prevalence of mental disturbances at present. He was introduced by Mrs. Frank W. Hartman, vice-president and program chairman of the Auxiliary.

Dr. Clark said that in speaking to this audience he felt like an employee reporting to his employer, for the taxpayers of Detroit are the owners of Receiving Hospital. He said that there are two reasons that we provide for the mentally deficient: because we are "our brother's keeper," and for our own protection. On this particular morning there were over 280 patients in the psychopathic ward at Receiving Hospital, and on busy days there have been nearly 500.

He stressed liquor as one of the chief stepping-stones leading to mental derangement, though the direct cause is usually physical illness or inadequacy, an inferiority complex, or some other mental pressure. The cells of the body form a protective substance in themselves against the irritation of alcohol. But, if a large amount of alcohol is consumed for a length of time, it gradually destroys the cells. Thus, if a man drinks consistently for a period of,

say five years, and then reforms, this physical destruction is often not visible. But, if the same man, sometime later, has a severe body injury he is very likely to develop delirium tremens. Because of this the hospitals administer a preventive whenever an accident victim is admitted who is known to have been addicted to intoxicants at any time.

During the general discussion which followed Dr. Clark's speech, the large number of questions asked indicated the great interest his talk had aroused.

The Monday night lectures on the "History of Medicine," sponsored by the Study Group of the Auxiliary, have continued to attract a great many doctors' wives and to receive much acclaim for their instructive value. On February 12th, Dr. Wm. J. Stapleton, Jr., took up "Roman Medicine"; on February 19th, Dr. L. M. Sa'di spoke on "The Legacy of Arabian Medicine," that period from the sixth to the thirteenth century; and on February 26th, Dr. Harry W. Plaggemeyer covered the last period in the course, that of the Italians, preceding and including the time of Harvey.

On Tuesday, February 6, Mrs. H. W. Plaggemeyer, corresponding secretary, entertained members of the Board of the Woman's Auxiliary at a buffet luncheon preceding the regular monthly Board meeting at her home.

Reports are that the many bridge clubs organized to promote acquaintance among doctors' wives living in the same neighborhood and for the benefit of the piano fund are proving very enjoyable. Also, that the members of the Wednesday afternoon public speaking class are reaping much knowledge as well as pleasure from their course. This enterprise is also for the benefit of the piano fund.

During the month, two groups of Auxiliary members accepted the invitation of Borden's Farm Products Co., of Michigan, to visit and have luncheon at their plant. The program included a special showing of the process of fortifying pasteurized milk with Vitamin D by direct irradiation, and an address by Mr. Will A. Foster, Vice President of the company, on "Practical Problems of Nutrition."

MRS. CLIFFORD LORANGER, *Publicity Chairman.*

EVAPORATED MILK

The many advantages in infant feeding of a high quality evaporated milk, such as Borden's, have been described in numerous reports of extensive clinical investigations. During the period from 1929 to 1932, inclusive, no less than forty-three papers on the properties and uses of evaporated milk appeared in the scientific literature, while in 1933 there were 21 additional papers on this subject in medical and technical magazines.

The most recent report on the successful clinical use of evaporated milk is that of Quillian in the *Journal of the Florida Medical Association* for January, 1934. As a result of this experience with 173 infants on evaporated milk compared with 167 on other formulas, this writer states that, "The chief advantages of the use of evaporated milk are ease of preparation, ready digestibility, economy, and safety," and he also concludes that, "..... properly modified, evaporated milk may be considered a satisfactory food for infants."

Borden's Evaporated Milk, which was accepted by the Committee on Foods of the American Medical Association in 1930, has been found satisfactory by innumerable physicians, who make it an invariable practice to specify Borden's by name when prescribing a standard evaporated milk for infant feeding.

OBITUARY

DR. MAX BALLIN

Dr. Max Ballin, of Detroit, died at his home on Longfellow Avenue, March third, as a result of heart disease. He had been illl about six weeks. Dr. Ballin was born at Nordhausen, Germany, August 13, 1869. He studied medicine at the Universities of Freiberg, Munich and Berlin. He was graduated from the University of Berlin in 1892 and came to the United States in 1896, where he began practice at Leadville, Colorado. On invitation of Dr. Donald McLean, the leading surgeon of this state during the nineties, Dr. Ballin came to Detroit, where he practiced his profession up to his last illness. He was head of the department of surgery of Harper Hospital from 1916 to the time of his death, as well as consulting surgeon to the Woman's Hospital, St. Mary's, the Highland Park General Hospital and the Children's Hospital of Michigan. In 1921 he was a member of the Detroit Welfare Commission. During the World War, Dr. Ballin was chief of the surgical service at Base Hospital, Camp Grant. His society memberships included the Wayne County, Michigan State and American Medical Associations, the Detroit Academy of Medicine, and the Detroit Academy of Surgery, the Detroit Board of Commerce and the Harmonie Society, the Army and Navy Club, the Phoenix Club and the Redford Country Club. Dr. Ballin held a unique position among the members of the medical profession as a research student. His ability as a surgical pathologist was respected to the point of veneration. Among his published work may be mentioned a monograph on Surgical Treatment of Exophthalmic Goiter, Bier's Hyperæmic Treatment, Malignant Leiomyoma, Routine Examinations, Progressive Post-operative gangrene of the Skin. In 1932 he was awarded two gold medals for scientific research by the American Medical Association and in 1933 he was awarded the bronze medal of the American Roentgen Ray Society. Dr. Ballin is survived by his wife, Carrie L., and four brothers. The funeral services were held on Wednesday, March the seventh, after which cremation took place.

Justice Henry M. Butzel, of the Michigan Supreme Court, and five of Dr. Max Ballin's medical associates—Drs. Robert C. Moehlig, Norman Allen, Maurice Meyers, Plinn F. Morse and Emil Amberg served as pallbearers.

Dr. Leo M. Franklin, of Temple Beth El, officiated. The rites were attended by more than 700 persons, including leading medical, professional and business men.

A violin solo was given by William Grafing King, of the first violin section of the Detroit Symphony Orchestra.

Common sense and wordly experience tell us that if we would overthrow an enemy we must understand all his resources; if we would overcome a difficulty, we must understand where the difficulty resists our attempts; if we would solve a problem, the nature of the problem must be understood. The principle underlying these statements should be applied in the prevention and cure of disease.

SIR JAMES MACKENZIE.

GENERAL NEWS AND ANNOUNCEMENTS

Dr. J. C. Foshee, Grand Rapids, spent two weeks the clinics in New Orleans.

President G. L. Le Fevre spent ten days in Palm Beach, where he was called in consultation.

Dr. Ferris N. Smith, Grand Rapids, was confined to a hospital for two weeks by reason of a severe erysipelas infection.

Members are again advised to make their Cleaveland hotel reservations for the A. M. A. meeting June 11-15.

Dr. Samuel Altshular and Miss Constance Weinberger of Detroit were married on Sunday, the fourth of March, 1934.

The regular meeting of the Detroit Roentgen Ray and Radium Society was held March 8 when the following guest speakers from Cleveland presented the program: Dr Otto Glasser, "Roentgen's Ideals as Reflected in his Letters"; Dr. B. H. Nichols, "Some Tumors of the Head Considered Roentgenographically"; Dr. U. V. Portmann, "Roentgen Therapy for Mediastinal Glandular Tuberculosis."

Dr. Hugo A. Freund, Dr. Henry A. Luce and Mr. James Watkins of Detroit were appointed by the Mayor of Detroit as an investigating committee to report on the conditions prevailing in the Receiving Hospital. This committee made a study of the economic and medical situation and reported among other things to the effect that the economic management should be by a Lay Business Manager whose duty it would be to keep a strict account of cost of maintenance and that the medical superintendent should be free to supervise the medical and surgical service.

The Annual Clinics and Banquet of the Alumni Association of the Detroit College of Medicine and Surgery will be held at Detroit on Wednesday, June 6, 1934. There will be both a morning and an afternoon program consisting of diagnostic clinics, presided over by men of international reputation, a clinico-pathological conference conducted by men secured for the occasion and there will be a skin clinic which will be an interesting feature. The banquet in the evening will be a testimonial dinner in honor of Drs. Angus McLean, Don M. Campbell and Andrew P. Biddle, presided over by the president of the Association, Dr. J. Milton Robb. The May number of this JOURNAL will contain detailed and additional information regarding the clinic and banquet, to which the profession is invited.

ROENTGENOLOGISTS IN MICHIGAN

The following list of physicians limiting their practice to x-ray diagnosis or x-ray therapy was published in the *Journal A. M. A.*, February 24, 1934:

Adrian—A. W. Chase; Ann Arbor—Samuel W. Donaldson, Fred J. Hodges, Harold W. Jacox, Carleton B. Pierce; Battle Creek—C. S. Gorsline, Theodore Kolvoord, W. O. Upson; Detroit—J. M. Berris, Carl C. Birkelo, Arthur R. Bloom, George C. Chene, Jas. H. Dempster, B. R. Dickson, Howard P. Doub, F. J. Eakins, Paul Eisen, Wm. A. Evans, Joseph M. Grace, E. Walter Hall, Clyde K. Hasley, Hans A. Jarre, J. C. Kenning, Traian Leucutia, Edward G. Minor, Lawrence Reynolds, S. E. Sanderson, O. J. Shore, Rollin H. Stevens, Henry L. Ulbrich, Clarence E. Weaver, Leslie F. Wilcox, E. R. Witwer; Flint—Myron W. Clift, R. Bruce Macduff; Grand Rapids—Thomas O. Menees, Vernor M. Moore, John H. Muller, Alden H. Williams; Jackson—R. M. Cooley, J. C. Kugler, H. W. Porter; Kalamazoo—A. W. Crane, John B. Jackson; Lansing—Carroll S. Davenport, Fred M. Huntley; Monroe—T. M. Moll; Muskegon—Leland E. Holly; Pontiac—J. E. Church, H. H. Pool; Saginaw—Wm. K. Anderson; St. Johns—T. Y. Ho; Traverse City—E. B. Minor; Ypsilanti—Chas. B. Pillsbury.

NORTHERN TRI-STATE MEDICAL SOCIETY

The annual meeting of the Northern Tri-State Medical Society will be held at Flint, April 10, 1934. The Tri-State Medical Society, as is well known, includes Michigan, Indiana, and Ohio. The place of meeting is the auditorium of the Hurley Hospital, Flint. Lunch will be served in the dining rooms of the hospital and a banquet will be held in the evening in the Durant Hotel. The program is as follows:

Dr. Wm. Clift, Flint, Mich.—"Upper Cervical Dislocations."

Dr. A. Dale Kirk, Flint, Mich.—"Infant Mortality."

Dr. M. S. Chambers, Flint, Mich.—"Principles in Treatment of Diseases of the Heart."

Dr. George Curry, Flint, Mich.—"Musculo-Spiral Paralysis."

Dr. Carl A. Hedblom, Professor of Surgery, Universary of Illinois, Chicago—"The Selective Surgical Treatment of Pulmonary Tuberculosis."

Dr. Clifford G. Grulee, Professor of Pediatrics, Rush Medical College, Chicago, Ill.—"Some Interesting Conditions in the Newly-born Infants."

Dr. Wm. M. Donald, Professor of Medicine, Detroit College of Medicine and Surgery, Detroit, Mich.—"What to Do When the Diabetic Comes."

Dr. George C. Hale, Professor of Medicine, University of Toronto, Canada, London, Ont., Can.—"Sleep."

Luncheon.

Dr. Norman F. Miller, Professor of Obstetrics, University of Michigan, Ann Arbor, Mich.—"The Anticipation and Management of Toxemia of Pregnancy."

Dr. Herman L. Kretschmer, Professor of Urology, Rush Medical College, Chicago, Ill.—"Changing Trends in the Treatment of Prostatic Obstructions."

Business Meeting.

Dr. Louis J. Hirschman, Professor of Proctology, Detroit College of Medicine and Surgery, Detroit, Mich.—"The Sclerosing Treatment of Hemorrhoids—Its Indications and Limitations."

Dr. Wilder Groves Penfield, Professor of Neurological Surgery, McGill University, Montreal, Quebec, Canada—"Epilepsy." "Classification and Management of Cases."

Dr. Arthur E. Hertzler, Kansas City, will address the assembly on "The Management of Goiter." Dr. Harry E. Mock, Associate Professor of Surgery, Northwestern University, will also be a guest speaker.

THE DOCTOR'S LIBRARY

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection will be made for review, as expedient, or in the interests of our readers.

RECENT ADVANCES IN VACCINE AND SERUM THERAPY. By Alexander Fleming, F.R.C.S. (Eng.), Professor of Bacteriology in the University of London; Assistant Director of the Inoculation Department, St. Mary's Hospital, and G. F. Petrie, M.D. (Aberd.), Bacteriologist-in-Charge, Serum Department Lister Institute, Elstree. With 5 Illustrations. P. Blakiston's Son and Company, Philadelphia, 1934.

This series of recent advances is authoritative and complete. The present volume may be taken as presenting the most recent knowledge on the subject of vaccine and serum therapy.

RECENT ADVANCES IN ENDOCRINOLOGY. By A. T. Cameron, M.A., D.Sc. (Edin.), Professor of Biochemistry, Faculty of Medicine, University of Manitoba; Biochemist, Winnipeg General Hospital. With 54 figures, including two plates. P. Blakiston's Son and Company, Philadelphia, 1934.

This volume of nearly 400 pages deals with the subject of the thyroid gland and iodine metabolism, the parathyroids, islets of Langerhans and insulin, the adrenals, pituitary, the endocrine secretions of the organs concerned with reproduction. The author discusses some actual and presumptive endocrine principles. The work is adequately illustrated and contains extensive bibliographies, following each chapter.

TREATMENT IN GENERAL PRACTICE. By Harry Beckman, M.D., Professor of Pharmacology at Marquette University, School of Medicine, Milwaukee, Wisconsin. Second Edition, Revised and Entirely Reset. 889 pages. Philadelphia and London. W. B. Saunders Company, 1934. Price $10.00 net.

Reprinted five times since it first appeared in 1930, Beckman's work on Treatment has been thoroughly revised, necessitating complete resetting. The present second edition comprises complete descriptions of the most approved methods of treatment of every condition that is apt to present itself to the general practitioner. The matter is conveniently arranged and well indexed. It fulfills all that is required of a work on treatment.

A DIABETIC MANUAL FOR THE MUTUAL USE OF DOCTOR AND PATIENT. By Elliott P. Joslin, M.D., Clinical Professor of Medicine, Harvard Medical School; Medical Director George F. Baker Clinic for Chronic Disease at the New England Deaconess Hospital; Consulting Physician, Boston City Hospital, Boston, Mass. Fifth Edition, Thoroughly Revised. Illustrated. Lea & Febiger. Philadelphia, 1934.

This little work of somewhat over 200 pages is beautifully illustrated and written in clear language so that any intelligent layman can easily follow it. Since the matter of care of the diabetic is largely one of education, Joslin's work forms an admirable little textbook for the diabetic as well as for the general practitioner who sees all such cases in their incipiency.

MODERN CLINICAL PSYCHIATRY. By Arthur P. Noyes, M.D., Superintendent of State Hospital for Mental Diseases, Howard, Rhode Island. Formerly First Assistant Physician at St. Elizabeth's Hospital, Washington, D. C. Formerly Chief Executive Officer at the Boston Psychopathic Hospital. W. B. Saunders Company, Philadelphia, 1934.

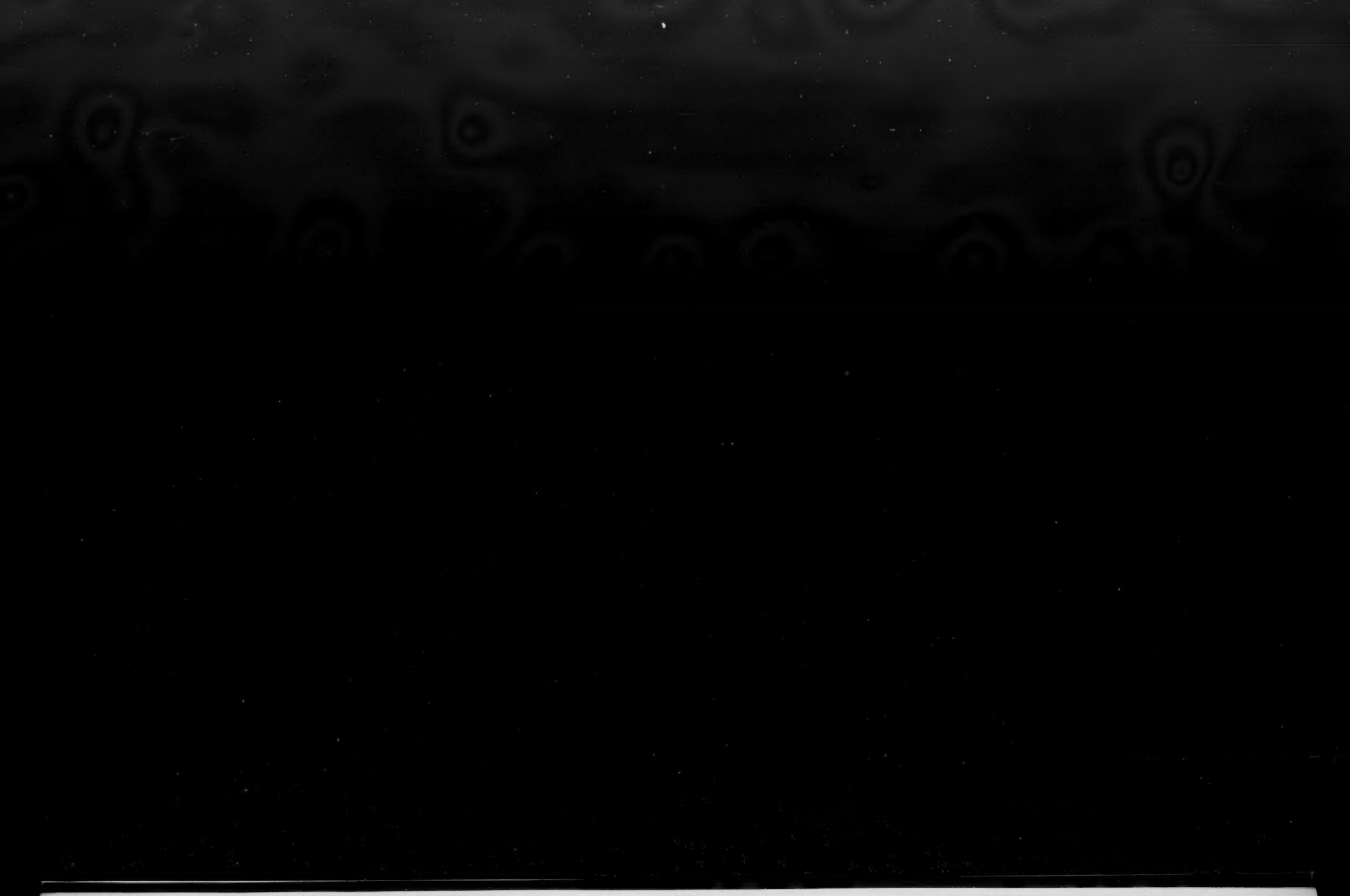
Psychiatry has been conceded the peculiar field of the specialist, yet in this state short intensive courses are being prepared for the general practitioner. A five day course was presented at the State University in January last. The field of the general practitioner is gradually enlarging so that one who knows no psychiatry or neurology is to that extent handicapped in the care of certain patients. Modern Clinical Psychiatry is really a monograph on the subject though it comprises somewhat less than 500 pages. Psychiatry is written up as that branch of medicine which deals with the diagnosis and treatment of disturbed personality functions. This surely is within the field of general practice.

MENTAL HYGIENE IN THE COMMUNITY. By Clara Bassett, Consultant in Psychiatric Work, Division on Community Clinics, the National Committee for Mental Hygiene, Inc. The Macmillan Company, New York, 1934.

Mental hygiene has assumed an important place during the past few years probably due to the tempo of the times leading up to the depression as well as the reaction caused by it. This work defines mental hygiene and discusses its importance and value as a means of achieving a healthier and happier community life. While the subject of mental hygiene would seem to relate more nearly to the practice of medicine, it is a subject which commends itself also to such professional classes as educators, ministers, lawyers and even finds a place in parent-teachers associations. The more intelligent parent would undoubtedly profit by such knowledge as may be gleaned from this work. Of course the less intelligent parent is hopeless. Among the subjects treated are Mental Hygiene in Medicine, Mental Hygiene and Parental Education, Mental Hygiene in Industry and in Recreation.

HANDBOOK OF PHYSIOLOGY. By the late W. D. Halliburton, M.D., LL.D., formerly Professor of Physiology, University of London, and R. J. S. McDowell, M.B., D.Sc., F.R.C.P. (Edinburgh), Professor of Physiology, University of London. Thirty-third Edition with numerous illustrations in the text, many of which are colored and four colored plates. Pages 971. 1934. P. Blakiston's Son and Company, Philadelphia.

It is very seldom that a textbook on medicine attains its thirty-third edition. This fact alone would go to indicate that this textbook nearly a century old is still meeting the demands of the day. It was formerly known as Kirke's Physiology. It is a product of the old St. Bartholomew Hospital in London, an institution that goes back within a few decades of the Norman Conquest. The subject of physiology has assumed such importance as well as proportions, when we consider its literature, that a single volume work on the subject embodies a judicious selection of the established facts of the science. This has been admirably performed by the present author, who is Professor of Physiology in the University of London.

MYSTERY, MAGIC AND MEDICINE. The Rise of Medicine from Superstition to Science. By Howard W. Haggard, M.D., Associate Professor of Applied Physiology, Yale University. Doubleday, Doran and Company, Inc., Garden City, New York, 1933.

This is a fascinating little work on the history of medicine, the subject of which is well covered by the title. The book is well illustrated and can be recommended as an interesting presentation. It is particularly adapted to the needs of the layman. The volume is provided with a glossary of proper names with short paragraphic biographies. These names cover probably the majority of the chief personalities in the history of medicine; there are as well descriptions of such subjects as the Caduceus, Bone of Luz, as well as some of the older drugs.